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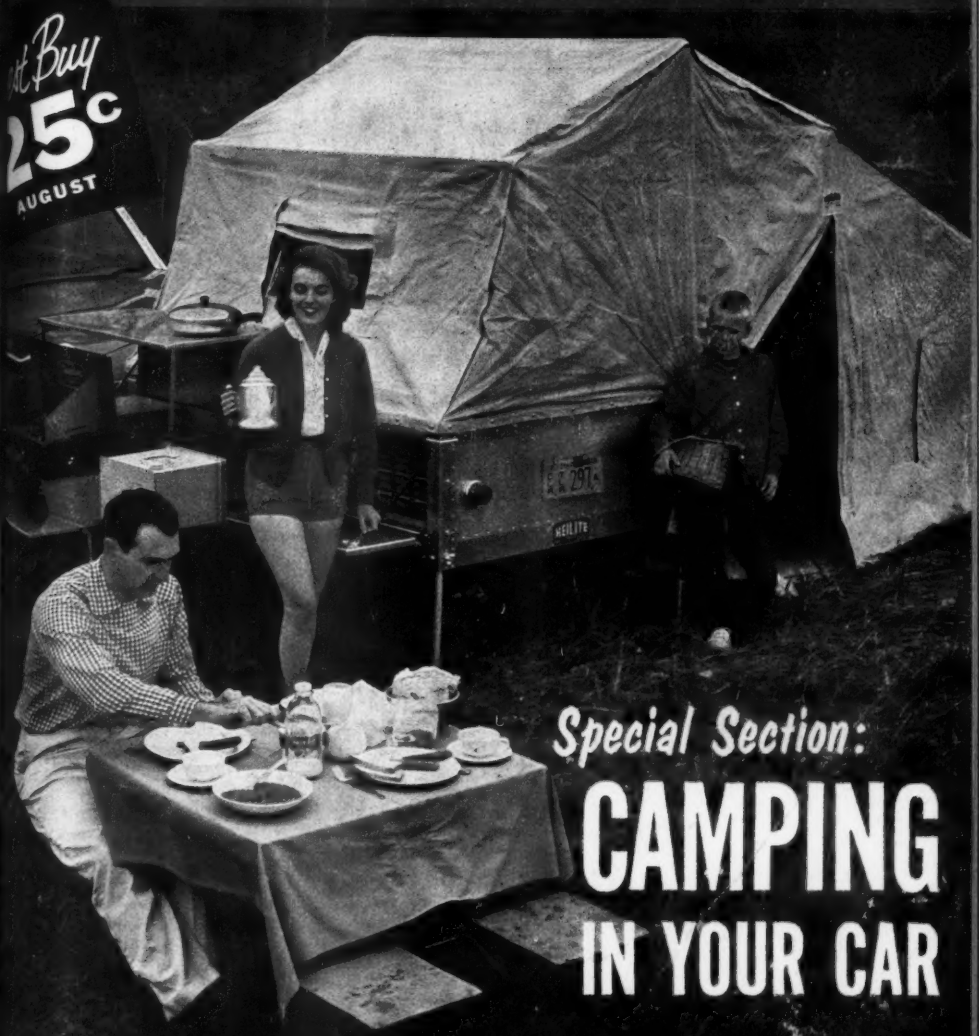

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AUGUST, 1960

Volume 59, Number 8

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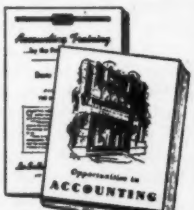

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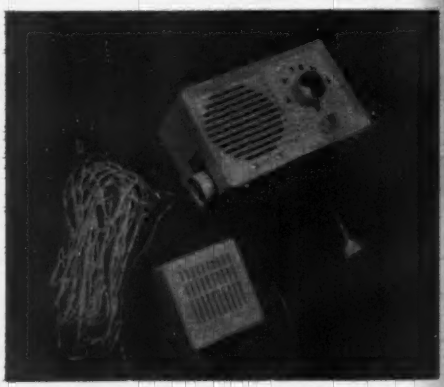

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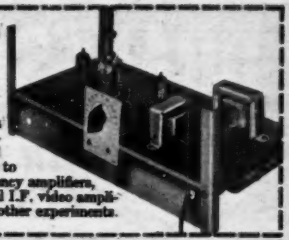

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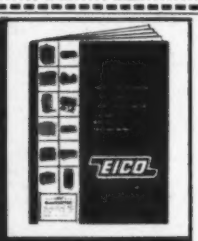

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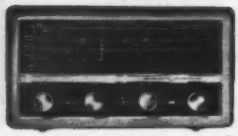

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Run your own profitable shoe store at home. Sell to friends, neighbors, folks where you work. Earn $217.00 EXTRA monthly on just 2 easy orders a day. You feature 230 styles of quality shoes for men and women. Famous Air Cushion Mason Shoes that sell themselves. Sizes 2½-15. Widths AAAA to EEEE. Many comfort features—stock of over 250,000 pair to draw from. Also horsehide jackets. Represent fast-growing million dollar shoe firm in spare or full time and big profits are yours. Everybody is a customer. You don't need to invest a cent in this wonderful sales opportunity. We'll rush you FREE a complete starting outfit that contains everything you need to begin making money. Just send us a postcard today!

MASON SHOE, Dept. G-272, Chippewa Falls, Wisc.

OLD FAITHFUL'S NEW RIVAL

A NEW leak in nature's underground boiler system is giving Yellowstone Park's Old Faithful a vigorous rival. On the southern Oregon plateau, near Lakeview, a gargantuan geyser is belching spray and steam all over the place. It blows 200 feet into the air compared to Old Faithful's 160 feet.

The Crump Geyser, named for the rancher who owns the land, came into being by accident last summer after a drilling company went down 1,684 feet, then gave up. Forty-eight hours later, the geyser blew its top.

The new sprayer erupts at a powerful flow velocity of 50 to 80 feet per second and spews 400 to 600 gallons of water a minute. It ebbs and flows in rhythmic tempo between 150 and 200 feet.

The erupting geyser shows no sign of quitting and there's even talk of making a park for the newest Wonder Of The West. •

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ny CTI graduates go in business

It is relatively easy to start a repair business in the Air Conditioning and Refrigeration field. Armed with up-to-date knowledge, seasoned with skill acquired through practice on kits, and equipped with tools and gauges, many graduates start out on their own. Some expand into retail stores. Others have contracts to service taverns, restaurants, food stores and commercial buildings. The more resourceful become contractors. Conditions for success are excellent.

ny students earn cash as they train

e average CTI student is eager to put skill to profitable work, on a part-time sis. Though most students prefer to tie with local dealers and repair establishents, a surprising number are independts. The extra cash helps meet training t. Often there's enough to bank, or est in more equipment.

ters prove efficiency of training

"I have a business of my own servicing domestic and commercial refrigerators."—*Paul Humphrey, Colo.* "I made $1,000 while training, and am now a refrigeration man for a dairy."—*Giles Minton, N.C.* "I opened a little shop and am swamped with work."—*Charles Corley, Kan.* "Doing service work on a part-time basis the past 10 months, I earned $2,400. Have a nice business."—*Renos Johnson, Ind.* "My firm advanced me to field superintendent."—*Milburn Dougan, Ark.* You can do as well as these graduates!

An exclusive feature of CTI training is that you get parts to build a ¼ h.p. commercial-type condensing unit (above). You also receive mechanic's tools and gauges (right). After unit is assembled, you can build an air conditioner, freezer, refrigerator or milk cooler. Only CTI sends *working* kits.

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The modern way to train is to gain skill and experience *with* knowledge—not *after* you graduate. From CTI's simple picture-lessons, you master elemental theory. From experiments and building with kits, you develop skill. In other words, you learn by practicing, pick up solid experience much like on the job. That's the interesting, relaxing way to train after a day's work on your present job. CTI training is exciting!

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Exactly what are your opportunities in Air Conditioning and Refrigeration? How does CTI train men for success? Get detailed, accurate answers to these and many more questions by filling out and mailing the coupon below. No obligation. —Commercial Trades Institute, Chicago 26, Ill.

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SCIENCE SHORTIES

THE Army has developed an all-purpose rust preventive that can be painted on metal surfaces; it is fireproof, anticorrosive and has no disagreeable odor.

A new method of developing 16 and 35 millimeter movie film in the camera has been perfected.

A thrust reverser is a device in a jet engine which turns the gas flow around to decelerate or brake the aircraft.

There are 360,000 40-watt bulbs in the advertising signs in New York City's Times Square and the electric bill is about $15,000 a day.

When the young robin is ready to leave the nest, two weeks after hatching, he eats 14 feet of earthworms each day.

A new hospital sheeting material, lighter and easier to handle than rubber materials for surgeons' aprons or draw sheets, consists of open-mesh glass fabric sandwiched between two thin films of plastic.

Russia has two and one-half times as much forest land as the U. S.

More than two-thirds of the American people list gardening as a hobby, ahead of such pastimes as golf, fishing, hunting, etc.

Nearly 30,000 fires are caused each year by electrical equipment of all types that have worn out in service.

An egg is about 70 per cent water.

Algae are simple-celled water plants that do about 80 per cent of the work of replenishing earth's oxygen supply.

There are more than 90,000,000 Americans who have not been vaccinated for polio.

The first manned aircraft to go higher than 100,000 feet was the F-104. It set a new world altitude record of 103,395 feet in 1959.

The average dairy cow produces 20,000 pounds of milk in a lifetime. •

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Dear Editor

Address mail to: MECHANIX ILLUSTRATED, Letters Editor, 67 West 44th Street, New York 36, N. Y.

● *Wj E5lql!*

Read the article Languages Made To Order in the May MI and got so enthused I thought I'd send you a code to break. Here it is:

7fjqaz ijrq 5zew ah e5l wjrk. Qlgjtl ijrq lfxjy bqjg 1v7zqw lil.

Have fun, gentlemen.

Frank Dorsey
Boston, Mass.

E5ze 7fjqaz—wjgl wfjx! But that's no code, Frank; it's a cipher.

● *Any Ideas?*

I want to put a motor on my Raleigh three-speed bike, using my Sturmey-Archer gear shift with the motor. I have figured out a way but it's complicated. Can MI or any MI readers help with this project?

Russell E. Lindquist
3807 Russell Ave. No.
Minneapolis, 12, Minn.

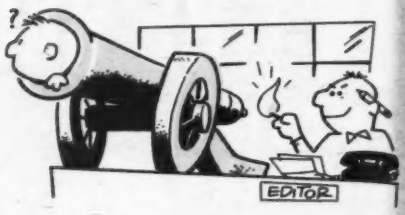
● *Proof*

I don't believe your Ouija Board can work. To prove it, ask it how old Mr. and Mrs. Akridge are; then I will know.

Bill Akridge
Dothan, Ala.

It says old Mr. and Mrs. Akridge are fine.

● *Yeah—300 Cannon*



In your June issue there is an article about a cannon collector and the title appears as He Owns 300 Cannon. I guess I don't have to point out that it should be 300 Cannons. Is that a "typo"?

P.R.B.
Milwaukee, Wis.

In the picture above you see what happened to a guy who wandered into our office with the same suggestion. He Owns 300 Cannon is perfectly OK because cannon can be plural as well as singular, like pig or lion. You aren't the only one who wrote in, P.R. We caught quite a boggle of boob with that one.

● *Unfun Boat*

In the May MI a plastic boat is referred to as a "fun boat." (Now See This!—pg. 80.) I don't know, it seems to me everything is a Fun Thing these days. Used to be only Fun House, but now we have Fun Cars, Fun People, Fun Jobs, Fun Hats. Isn't any boat a Fun Boat?

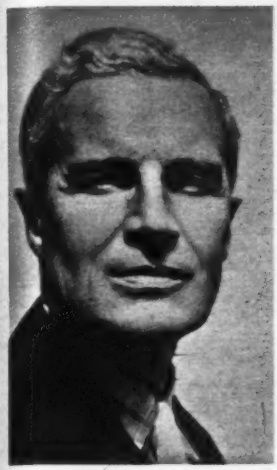
Jack Kramer
Tallahassee, Fla.

No. For instance, a convict ship was not a fun boat, nor is one that carries you two miles out and sinks. A small sailboat in which you get seasick while the owner barks salty commands at you is not a fun boat.

● *Space Taxi*

I found your April article Space Age Table Top by Tim McCoy a highly interesting one. The ship in the photo is a Space Taxi, one

[*Continued on page* 18]



I'd like to give this to my fellow men...

while I am still able to help!

I was young once, as you may be—today I am older. Not too old to enjoy the fruits of my work, but older in the sense of being wiser. And once I was poor, desperately poor. Today almost any man can stretch his income to make ends meet. Today, there are few who hunger for bread and shelter. But in my youth I knew the pinch of poverty; the emptiness of hunger; the cold stare of the creditor who would not take excuses for money. Today, all that is past. And behind my city house, my summer home, my Cadillacs, my Winter-long vacations and my sense of independence—behind all the wealth of cash and deep inner satisfaction that I enjoy—there is one simple secret. It is this secret that I would like to impart to you. If you are satisfied with a humdrum life of service to another master, turn this page now—read no more. If you are interested in a fuller life, free from bosses, free from worries, free from fears, read further. This message may be meant for you.

By Victor B. Mason

I am printing my message in a magazine. It may come to the attention of thousands of eyes. But of all those thousands, only a few will have the vision to understand. Many may read; but of a thousand only you may have the intuition, the sensitivity, to understand that what I am writing may be intended for you—may be the tide that shapes your destiny, which, taken at the crest, carries you to levels of independence beyond the dreams of avarice.

Don't misunderstand me. There is no mysticism in this. I am not speaking of occult things; of innumerable laws of nature that will sweep you to success without effort on your part. That sort of talk is *rubbish!* And anyone who tries to tell you that you can *think* your way to riches without effort is a false friend. I am too much of a realist for that. And I hope you are.

I hope you are the kind of man—if you have read this far—who knows that anything worthwhile has to be *earned!* I hope you have learned that there is no reward without effort. If you have learned this, then you may be ready to take the next step in the development of your karma—you may be ready to learn and use the secret I have to impart.

I Have All The Money I Need

In my own life I have gone beyond the need of money. I have it. I have gone beyond the need of gain. I have two businesses that pay me an income well above any amount I have need for. And, in addition, I have the satisfaction—the deep satisfaction—of knowing that I have put more than three hundred other men in businesses of their own. Since I have no need for money, the greatest satisfaction I get from life, is sharing my secret of personal independence with others—seeing them achieve the same heights of happiness that have come into my own life.

Please don't misunderstand this statement. I am not a philanthropist. I believe that charity is something that no proud man will accept. I have never seen a man who was worth his salt who would accept something for nothing. I have never met a highly successful man whom the world respected who did not sacrifice something to gain his position. And, unless you are willing to make at least half the effort, I'm not interested in giving you a "leg up" to the achievement of your goal. Frankly, I'm going to charge you something for the secret I give you. Not a lot—but enough to make me believe that you are a little above the fellows who merely "wish" for success and are not willing to sacrifice something to get it.

A Fascinating and Peculiar Business

I have a business that is peculiar—one of my businesses. The unusual thing about it is that it is needed in every little community throughout this country. But it is a business that will never be invaded by the "big fellows". It has to be handled on a local basis. No giant octopus can ever gobble up the whole thing. No big combine is ever going to destroy it. It is essentially a "one man" business that can be operated without outside help. It is a business that is good summer and winter. It is a business that is growing each year. And, it is a business that can be started on an investment so small that it is within the reach of anyone who has a television set. But it has nothing to do with television.

This business has another peculiarity. It can be started at home in spare time. No risk to present job. No risk to present income. And no need to let anyone else know you are "on your own". It can be run as a spare time business for extra money. Or, as it grows to the point where it is paying more than your present salary, it can be expanded into a full time business—overnight. It can give you a sense of personal independence that will free you forever from the fear of lay-off, loss of job, depressions, or economic reverses.

Are You Mechanically Inclined?

While the operation of this business is partly automatic, it won't run itself. If you are to use it as a stepping stone to independence, you must be able to work with your hands, use such tools as hammer and screw driver, and enjoy getting into a pair of blue jeans and rolling up your sleeves. But two hours a day of manual work will keep your "factory" running 24 hours turning out a product that has a steady and ready sale in every community. A half dollar spent for raw materials can bring you six dollars in cash—six times a day.

In this message I'm not going to try to tell you the entire story. There is not enough space on this page. And, I am not going to ask you to spend a penny now to learn the secret. I'll send you all the information, free. If you are interested in becoming independent, in becoming your own boss, in knowing the sweet fruits of success as I know them, send me your name. That's all. Just your name. I won't ask you for a penny. I'll send you all the information about one of the most fascinating businesses you can imagine. With these facts, you will make your own investigation. You will check up on conditions in your neighborhood. You will weigh and analyze the whole proposition. Then, and then only, if you decide to take the next step, I'll allow you to invest $15.00. And even then, if you decide that your fifteen dollars has been badly invested I'll return it to you. Don't hesitate to send your name. I have no salesmen. I will merely write you a long letter and send you complete facts about the business I have found to be so successful. After that, you make the decisions.

Does Happiness Hang on Your Decision?

Don't put this off. It may be a coincidence that you are reading these words right now. Or, it may be a matter that is more deeply connected with your destiny than either of us can say. There is only one thing certain: If you have read this far you are interested in the kind of independence I enjoy. And if that is true, then you must take the next step. No coupon on this advertisement. If you don't think enough of your future happiness and prosperity to write your name on a postcard and mail it to me, forget the whole thing. But if you think there is a destiny that shapes men's lives, send your name now. What I send you may convince you of the truth of this proverb. And what I send you will not cost a penny, now or at any other time.

VICTOR B. MASON
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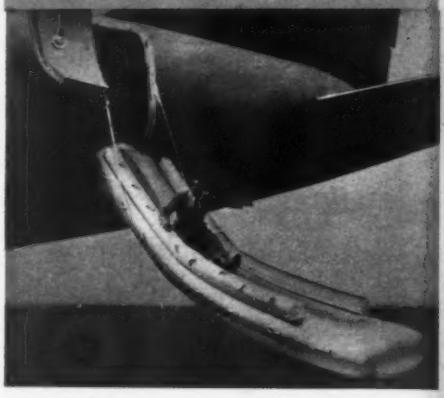

ESCAPE SLIDE for passenger planes is a flat sheet of rubberized fabric supported by two inflated tubes. To be used for escapes from planes on ground, it works even with the aircraft doing a headstand. As escapee descends he slows down safely; steepness of slide lessens automatically. The first slides will go into Boeing 720 jets. Designed for jet planes by Garret Corp. Air Cruisers Div., Belmar, N. J.

PLASTIC FOXHOLE is cleaner, drier, stronger in the sidewalls and shock-cushioned as well. The urethane foam plastic sprays on. It can be colored for camouflage but is shown white here so that you, dear ex-GI, may see it clearly. The stuff can be used to coat caches of food or ammo and in bomb shelters, tunnels, trenches, etc. Sissy foxholes are a development of American Latex Products Corp.

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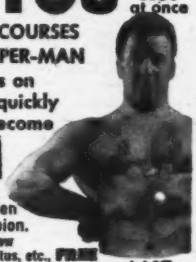

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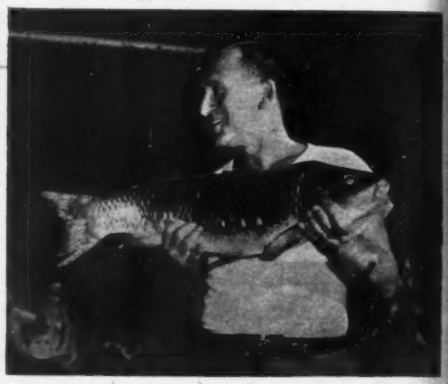

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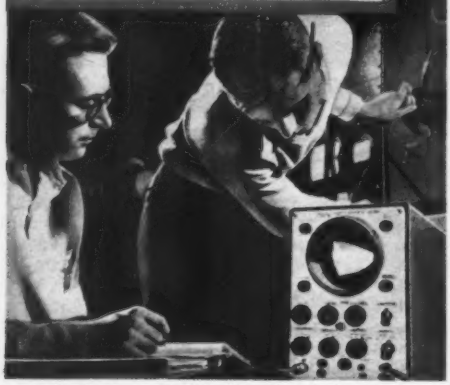

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Dear Editor

[*Continued from page* 12]

of the four space models designed for Monogram Models by pioneer rocket scientist Willy Ley. As conceived by Mr. Ley, the Taxi transports cargo from one point to another in outer space—as from a cargo rocket to a space station in orbit.

To use it properly in photographs, hobbyists should know the reason for its design. The cages fore and aft are used to guide the Taxi into portholes in space stations. Cargo would be put in the cylindrical body. The pilot would operate the ship from the transparent cupola. Inflatable rubber gaskets around each end of the Taxi would form an airtight seal to enable the taxi to transport its cargo safely from a space station port.

The Monogram kit comes complete with a display in the form of a terrestrial globe, a pilot and three men in space suits.

Jack M. Besser
General Manager
Monogram Models, Inc.
Chicago 32, Ill.

● *Karting In Mexico*

In your article on go karts in the Jan. MI you say that "in Mexico karts are actually used for street transportation." This is not true. Karts are forbidden to be used on public roads. Only a few take the risk of being fined by the police by going on public roads with karts.

I. M. Rivera Encinas
Mexico City

● *Government Publications*

Thank you very much for the copy of MI which carries the article about U. S. Government publications (You Can Learn It From Uncle Sam, April MI). Articles of this kind always result in letters to this office, which we welcome, and having a copy on file helps in the inevitable instances where the request may not be too clear. It has already solved a minor mystery of a number of requests to become a member of our "booklet club." I think it is a factual article, well done, and hope it will acquaint your readers with the possible help they can receive from Government publications.

Carper W. Buckley
Superintendent of Documents
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[*Continued on page* 27]

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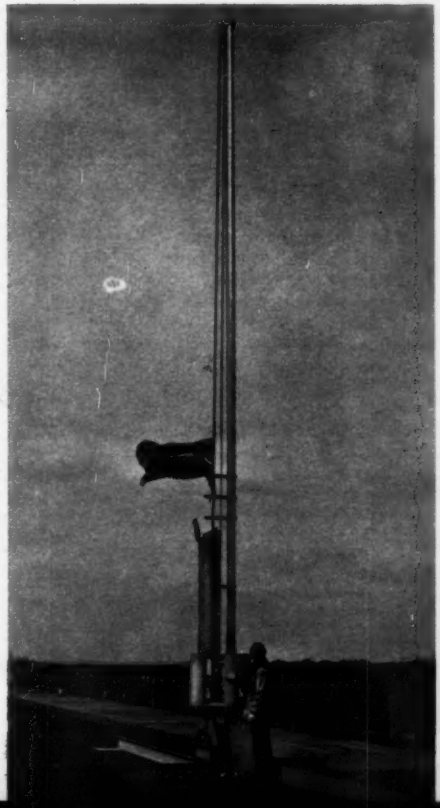

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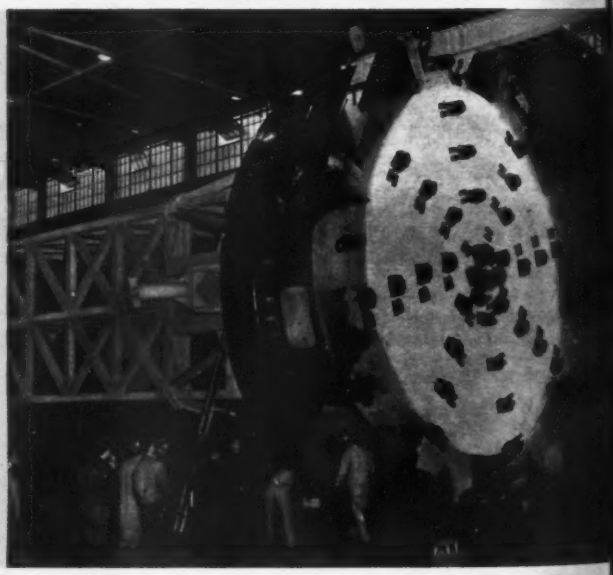


PATENTS GRANTED

AFICIONADOS of the pogo stick will be delighted with the gas-powered job (patent 2,929,459) invented by Gordon Spitzmesser of Elwood, Ind., for the "safe and harmless" amusement of "children and adults alike."

A transparent vehicle crash curtain that is automatically released to drop between a car's occupants and windshield when the car comes to a sudden stop won patent 2,933,343 for William Potts, Brantford, Ontario, Can.

Ballet dancers will be able to practice anywhere with the new, knock-down, quick assembly bar devised by Allan Kravitz of Detroit, Mich. The bar is said to be rigid enough for heavy exercise and light enough to be easily transportable.

A combined headrest and sunshade for beach use took patent 2,932,833 for Katherina Wambach of Philadelphia, Pa. The device can be folded flat to form a bag that can hold a bathing suit, towels, etc.

Inability to wear conventional socks with the increasingly popular slippers or sandals that have a strap running betwen the big toe and the other toes, prompted Deward L. Corbin of San Bernardino, Calif., to devise a sock (patent 2,932,829) with two equal-size toe compartments. One compartment covers the big toe; the other the rest of the toes. The sandal strap fits comfortably between the two compartments.

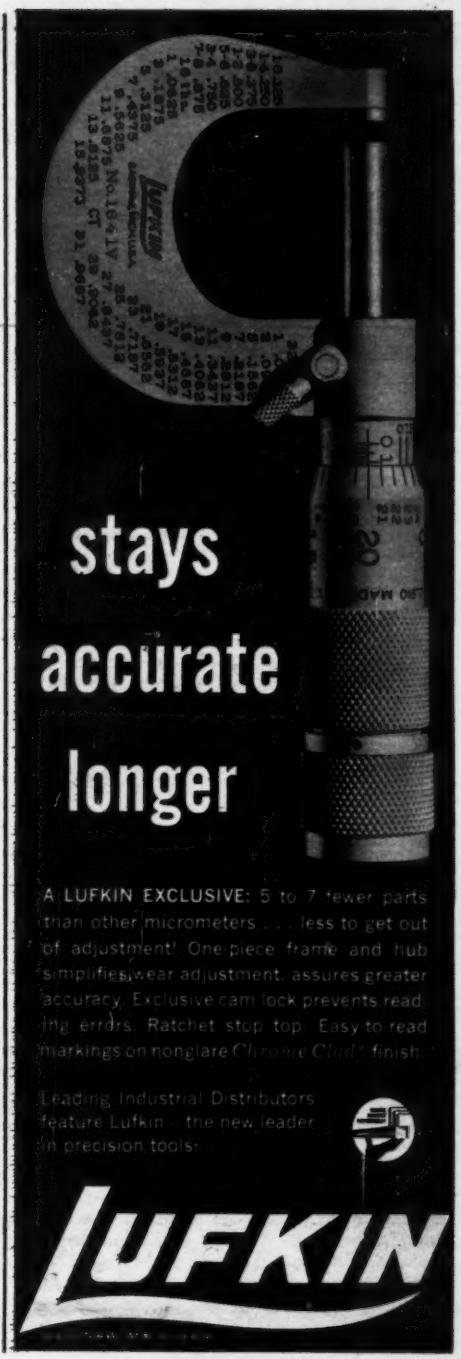
A "tuberosity meter" invented by Thomas N. Scoville, Reading, Pa., is claimed to make accurate determinations of chair dimensions for any given person, insuring maximum comfort and proper seating habits. It earned patent 2,932,968.

A floatable breakwater barrier for calming rough waters for loading and unloading ships as well as oil drilling got patent 2,928,250 for Alonzo L. Smith, Houston, Tex. The barrier is made of many hollow, inter-connected chambers.

William P. Lear of Pacific Palisades, Calif., invented a single airplane instrument that tells at a glance the altitude of an aircraft and the direction in which it is going. The unit was awarded patent 2,924,885.

An infant pacifying device invented by Robert R. Horton of St. Paul, Minn., produces a mild vibration and an audible buzzing sound similar to the hum of an electric shaver. It can be safely operated on top of a bassinette mattress or on a mattress. The device got patent 2,932,821.

A clamp attachment for correcting ingrown toenails got patent 2,920,621. •



Invention Clinic

Joseph H. Kraus

In this column each month Mr. Kraus will answer as many letters as space permits on those subjects he feels to be of widest general interest. Time does not allow him to reply to any letters except those printed here. Address your questions to the Invention Clinic, *Mechanix Illustrated*, 67 West 44 St., New York 36, N. Y.

Novel Mask

Alvie Carter of Salt Lake City, Utah, sends a sample of an illuminated mask for Halloween and similar celebrations. He plans to sell the item locally. What are its chances?

Here is something which may become a quick hit or may be a complete dud. There is really only one way to find out. Trying to sell the item locally is sound procedure but it has its risks. If it becomes popular you will have imitators immediately. Furthermore you need to be sure you are not infringing on some other patent. Illuminated masks are not entirely new. You should also improve the construction. The mask you sent was badly damaged in the mail.

Auto Air Conditioner

F. D. Wall of Houston, Texas, sends diagrams for a do-it-yourself unit to serve as an air conditioner for autos. Does this have possibilities?

None at all. This is not an air conditioner. It is only a complicated system for circulating air cooled by ice or dry ice. You could get much better results by hanging a box of ice or dry ice inside a car and running a rubber hose from it to a hole in the floor to allow water or carbon dioxide to escape.

Patenting An Improvement

Alfred Alberti of Queens Village, N. Y., wonders if it is possible to patent an improvement. He wants to install a special bushing in a casting which at present has none.

You can patent an improvement but you cannot force the original patentee or the manufacturer to use the improvement. And you dare not produce the patented article with the improvement either. I doubt that your suggestion would be considered patentable because no inventiveness is disclosed in it.

Electrical Tachometer

Karl Fitzgerald of Bell, W. Va., has designed an electrical tachometer for autos. The device is so simple, he says, that he wonders why no one has thought of it before. Can he patent it? What would be the cost?

With considerable modification the circuit could be made to operate—and also to destroy the usefulness of the generator and regulator and damage the battery. Imagine that your car ammeter is calibrated according to your plan. Start the engine, race the motor and see how the needle drops to around zero as engine speed increases and the charge picks up in the battery. The reverse should have been true. You might be able to win a patent on the circuit but I certainly would not recommend that you try to do so. If your suggestion could be made to work, the combination might cost as little as $3.00 or as much as $25, depending on the accuracy of the meter. If it requires another type of generator you may need to add another $25.

[*Continued on page* 24]

INVENTOR'S TIP OF THE MONTH

Body squeaks and rattles are extremely difficult to locate in cars because one hears them only when the car is in motion and also because sound is conducted very well through metal. A device or system for finding such noises when the car is stationary would be valuable to garage mechanics.

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Invention Clinic

[*Continued from page 22*]

Unbiased Consideration

Howard B. Pearson of Burlingame, Calif., has completed the calculations for a mechanical movement which would continue to operate indefinitely until the parts have worn out. He realizes that this has been generally considered impossible but refers to a half century of struggle and some 30 years of experience with inventions. Where can he find someone to give him an unbiased consideration and opinion?

Right in this column if space is available. I always call my shots as I see them.

Auto Rain Shield

Albert J. Higgins of Palmer, Mass., sends a design and construction details for an auto rain shield for a special purpose. If practical, would this be a good design to patent or just to market for a fast coverage?

If completely practical it may be both. And

[*Continued on page 29*]

Push-Button Dialing

ONE press of a starter key dials a telephone number automatically on Dialaphone, a device which saves time looking up numbers and also eliminates possibility of wrong numbers. It can accommodate 850 names and numbers in its memory—including Direct Distance Dialing.

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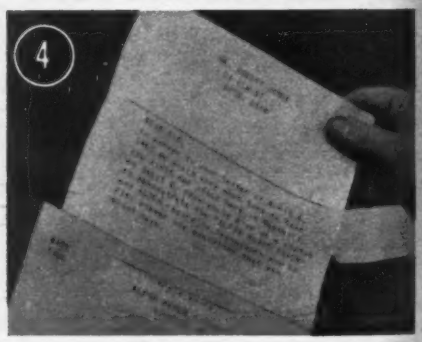
MAGIC PAPER

1. SENDER seals letter in a special envelope, hands it to messenger.

THE big problem in sending mail by electronic facsimile equipment has been secrecy. The problem may now be solved by the development of "magic paper" by the Alden Electronic & Impulse Recording Equipment Co. The message disappears as soon as it's received, reappears when the letter is in the hands of the addressee. •

3. RECEIVER prints letter in facsimile that disappears just as soon as it's received.

2. OPERATOR puts envelope into scanner. The letter is withdrawn, typed side down.



4. ADDRESSEE withdraws sealed letter delivered by messenger. Printing reappears.

Dear Editor

[*Continued from page* 18]

• *Autograph Camera*

For the benefit of S. G. Yates, Peoria, Ill. (Letters, May issue), Kodak's Autograph Camera was the 3A. I bought one in 1924 and am still using it for pictures of record; house repair, new garage, etc. The only repair in 36 years has been replacement of bellows.

Edwin H. Blanchard
Jackson Heights, N. Y.

After reading the article on the Autograph Camera, I decided to give one of these cameras a try. I borrowed an Autograph Camera from a friend of mine who has one. Kodak made this one around 1910. The biggest thing you must take into consideration is that today's films are much faster than when this camera was designed and manufactured. I found when you opened up the slot to write on the film you fog your film or at least a part of it. My advice is to seal this autograph slot up because a good picture is better than a fogged one with an autograph on it.

Allan Duplissie
North Vancouver, B. C.

• *Old Streetcars*

I am writing to ask you if you have any drawings of old-fashioned summer streetcars or basic dimensions as I want to build one as a model.

[*Continued on page* 31]

A FISHY CASE

Those extra eyeglass cases which always seem to clutter up desk drawers can make safe carrying cases for fishing plugs as shown.

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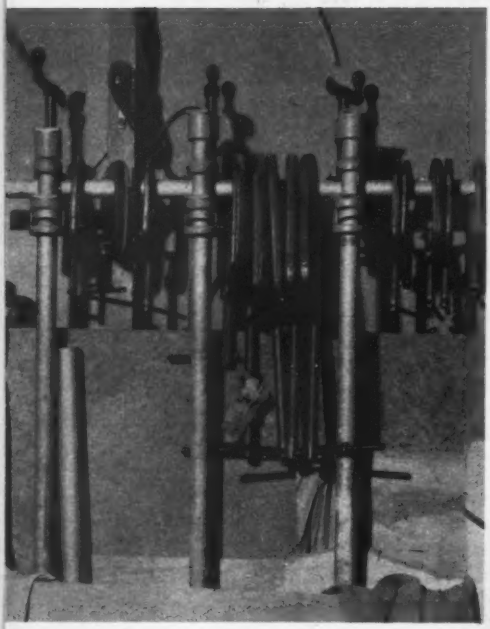
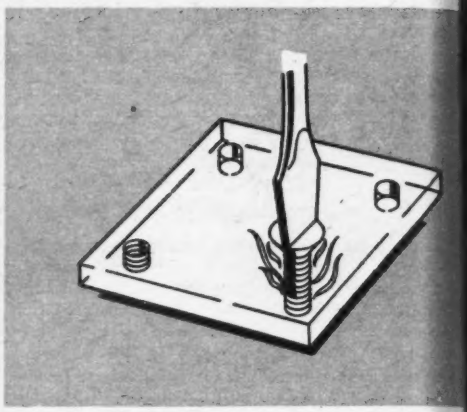


SPACE SAVER. Use pipe hangers to fasten a length of pipe across exposed joists for storing bulky tools such as shown above.



THREADING PLASTIC. You can thread holes in plastic by first drilling an undersize hole; then use heated bolt to "cut" threads.

JAR CAP REMOVER. A rubber strip wrapped around a jar cap will give you enough of a grip to remove the most stubborn caps.

CUP HOOK DRIVER. Cut a slot in the handle of your screwdriver to make a handy tool for driving home cup hooks and screw eyes.

Invention Clinic

[*Continued from page* 24]

it has an entirely new potential market which has not yet been tried but should be relatively easy to establish. The first thing to do is to make a number of samples and test them thoroughly. Then try to discover what other more simple constructions might be possible, because when once you establish this item others will try to duplicate your results in a different way. It seems to us that you can dispense with the requirement for inflating. Substitute springs instead. Take your time, test each design and plan every move. This could become financially productive.

Smog Elimination System

Don Ewers of Hollywood, Calif., outlines the high temperature inversion in the Los Angeles area, the geographical and geophysical facts for it, and then suggests a system

[*Continued on page* 55]

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Jewel Hunters Of Hawaii

AVID fortune hunters are scrambling today over the barren, still smoking lava wastes surrounding the two recent volcanic eruptions on the island of Hawaii in search of beautiful jewel-like stones known as *olivines*.

One man gathered a handful in a day's search recently and he is richer by several thousands of dollars.

The olivine resembles the emerald although it is a much paler green and is translucent. A lapidary can cut and polish them for sparkling rings, necklaces or bracelets.

The volcanic eruption of Kilauea Iki last November drew hundreds of spectators when the lava fountains gushed higher than New York's Empire State Building. Few knew, however, that along with the molten magma (lava), Pele's hair (a fine-spun volcanic glass) and sulphur, the precious olivines were also being thrown forth from the very heart of the earth.

There were days when the golden lava hurtled more than 1,600 feet into the sky and the earth trembled with a roar louder than a dozen subway trains. Gale force winds swept across the primeval landscape cooling the liquid olivine and carrying the solidified bits of mineral far down the slopes of Kilauea. Fabulous pockets of the glittering stuff collected on the mountainside. Then the fires of Kilauea Iki suddenly went out. A few weeks later another volcano erupted near the village of Kapoho about 12 miles away. And these new geysers of lava also spewed olivines from the bowels of the earth. The Kapoho volcano raged for a month, then it too went dead. Now a man can make himself a small fortune by hunting for olivines in the devastated area.

Hundreds of miles under the earth's crust exists a thin band of pure olivine which circles the globe, according to Dr. Gordon Macdonald, seismologist at the University of Hawaii. This gorgeous substance is only brought to the surface during great volcanic upheavals. The mineral is found mainly in Hawaii where the islands of the 50th State are still in the process of geological creation, but a few have been picked up on the Island of Sicily. Most olivines are round, about the size of a pea, but a real lucky man may find some the size of his thumb nail.

The market value of olivines is based on carats and quality. The smallest bring from $5 to $10 each from jewelers but larger gems may be worth five times as much—especially to the tourist trade. The recent Kilauea Iki eruption brought up the greatest amount and the largest, best quality olivines in geological history.—*Ivan Cameron*

Dear Editor

[*Continued from page 27*]

I would like you to also ask your readers if they would have anything on the above and if they have any photos showing them. I will buy any they might have.

Have tried to get something on this subject from various hobby shops but I get a negative reply from all.

Tom P. Enderes
P. O. Box 343
Hamilton, Ohio

• *Invention Still Wanted*

In May 1960 MI Inventions Wanted, page 77, Joe Sebastian, Jr., of Farrell, Pa., wants a car top antenna built into the roof of a car.

The Dec. 1936 Modern Mechanics, page 119, showed that the Graham 1937 had a center panel section of the steel roof insulated to serve as a radio aerial.

John W. Love
2253 San Antonio
Alameda, Calif.

Good idea, wasn't it? Modern Mechanics, readers, was MI's old name.

• *Something For Everyone*

I was wondering if you could put me in

[*Continued on page 35*]

Relief By Scooter

RELIEF pitchers at Milwaukee's County Stadium get relief from that long walk in from the centerfield bull-pen by riding a Harley-Davidson Topper motor scooter. Shown here is Don McMahon, Braves' relief ace, grimly awaiting his stint on the pitchers' mound.

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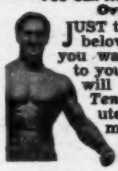

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The new foam milk weighs only 13 per cent of fluid milk and will be sold at attractive prices, it is claimed. It is now being made by batch processing by the U. S. Department of Agriculture and a continuous-process method is being developed by a private firm. •

BATCH of whole-milk concentrate out of dryer is greatly expanded, resembles foam.

CLOSEUP shows foamy structure of vacuum-dried milk uniformly expanded to ready-mix.

Science Saves The Trout

IF the American trout had been left on his own, the chances are he'd be as rare today as the whooping crane. There are many reasons for the never-ending peril of the trout's life: fish-eating birds, animals, snakes and, of course, millions of trout fishermen. But the No. 1 threat to the perpetuation of this breed is—the trout himself.

Fish are natural cannibals but trout are the most cannibalistic of all. They not only eat their brothers and sisters but their young as well. A female trout considers the eggs of another trout a gourmet's delight. And unless trout eggs—once laid—are fertilized within 20 minutes they will never burst their sacs and become live, wriggling fish.

Most wildlife authorities believe that about 95 per cent of wild-laid trout eggs never hatch; and that of the remaining five per cent, only half survive. Consequently the trout owes far more than he knows to the booming development in recent years of the scientifically-coordinated trout hatchery.

The wheels of the hatchery go into motion at a place called "the breeding pond," a section of piped-in, 50° F. spring water, sandy-bottomed and boarded or cemented off on both sides. Into this breeding pond are dip-netted specially selected trout with rugged-looking fins and high coloration similar to that of the wild trout. In late fall the spawning season begins.

When the experienced eye of the trout farmer tells him the female trout is laden with eggs, he dip-nets her from the water and "strips" her. Stripping a female trout is accomplished by holding her in the right hand, belly up and head forward, then massaging the belly gently with just enough pressure to force the eggs out, 500 to 5,000 of them. The eggs drop into a funnel and through the funnel into a square tray below.

Then the male trout is taken by dip-net and is held in the same manner by the "spawn surgeon" and similarly relieved of sperm. Once the eggs and sperm have mixed (this type of impregnation is usually finished in 80 seconds) the tray is taken to a small enclosure called the "hatching house."

Here the tray is submerged in a trough of constantly moving spring water and the quiet life of the embryo continues from four weeks to two months. No cannibalism can occur, and in due time the eggs hatch, the trout grow, and streams and ponds all over the nation are constantly replenished. Without these scientific methods the native American trout would no doubt have been long since extinct.

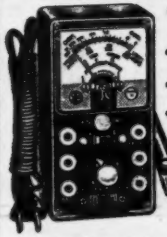
—*Duane Decker*

Superior's New Model 70 UTILITY TESTER®

FOR REPAIRING ALL ELECTRICAL APPLIANCES

MOTORS • AUTOMOBILES • TV TUBES

As an electrical trouble shooter the Model 70:



- Will test Toasters, Irons, Broilers, Heating Pads, Clocks, Fans, Vacuum Cleaners, Refrigerators, Lamps, Fluorescents, Switches, Thermostats, etc.
- Will test all TV tubes for open filaments, internal shorts, burned out tubes, etc.
- Measures A.C. and D.C. Voltages, A.C. and D.C. Current, Resistances, Leakage, etc.
- Will measure current consumption while the appliance under test is in operation.
- Incorporates a sensitive direct-reading resistance range which will measure all resistances commonly used in electrical appliances, motors, etc.
- Leakage detecting circuit will indicate continuity from zero ohms to 5 megohms (5,000,000 ohms).

As an Automotive Tester the Model 70 will test:

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Model 70 comes complete including 64 page book, only $15.95

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Mail to: MECHANIX ILLUSTRATED, Subscription Dept., Fawcett Bldg., Greenwich, Conn.

Dear Editor

[*Continued from page* 31]

connection with someone interested in finding buried treasure. Particularly gold. You see, I have always been interested in that sort of hobby, so I made myself a gold detector and since I have completed it would like very much to hear from someone who is interested in that sort of thing.

William Elliot
13817 Deise Ave.
Cleveland 10, Ohio

You'll probably get a few replies to this!

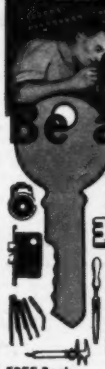
• *Flag Etiquette*

With the advent of the new 50-star Flag our handy reference folder setting forth the most important rules and customs governing the use and display of the Flag, taken from the Flag Code Law passed by Congress, should serve as a useful guide. It also contains the dates of important holidays and other valuable information. It may be had without charge; simply send self-addressed stamped envelope to Mackley Trading Co., 1123 Broadway, New York 10, N. Y. •

NEW PLASTIC PIPE

Hi-Temp Geon, a plastic made by B. F. Goodrich Chemical Co., is formed into pipes which can carry hot water for domestic use. Fitting connections are made with a solvent.

"I Earn Two Incomes Now"



Says John Bennie, Pittsburgh, Pennsylvania
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It's Coming!

New miracles of science that you'll be seeing soon.

AUTO engine lubricants which never have to be changed were foreseen recently at an American Chemical Society symposium. Dr. W. A. Zisman of the U. S. Naval Research Laboratory said, "The lubricants discussed show that engine oils which last the life of an automobile are a definite possibility."

More and better ham, bacon and pork chops for less money may be possible, claims pig nutritionist Dr. Damon V. Catron of the State University of Iowa. The secret is to feed new-born pigs ten per cent more of the right feed the first eight weeks of life. Result would be an eight to ten per cent increase in weight, and more leanness, says Dr. Catron.

The future will see a lightweight device that people can wear and use to see and talk with anyone, anywhere, even in space. That's the prediction of Dr. Paul A. Siple, U. S. Army Research Officer Advisor.

Victims of radiation sickness may be treated in the future with remedies as simple as olive and peanut oils, according to research done by Dr. James K. Ashikawa, bio-physicist at the University of California Donner Laboratory in Berkeley.

Diamonds may be the doctor's and industry's best friend if a high voltage electron accelerator pays off for the Diamond Research Laboratory in Johannesburg, South Africa. Researchers will study diamonds' potential uses in supersensitive thermometers, as transistors and as tiny probes for tracing radioactive matter.

One of the world's largest non-steerable radio-telescopes is being built in a ravine on a bluff of the Vermillion River about 35 miles east of the University of Illinois. When completed, the metal reflector will be 600 feet long, 400 feet wide and 65 feet deep. Cost will be over $250,000. The unit will be in operation in about two years.

Electronics circuits may be replaced in some Army equipment by control devices that use liquids or gases, instead of electricity, and that have no moving parts. Applications of the new control devices developed by B. M. Horton, R. D. Bowler and R. W. Warren of the Army's Diamond Ordnance Fuze Laboratories, may also include controlling dishwashers, power tools and computers. Industrial uses are also forecast.

Wrapping manned space vehicles with a thin blanket of gas may be the solution to the problem of air-friction heating during re-entry into the earth's atmosphere, according to scientists at California Institute of Technology where such research is being conducted.

Muscles broadcast not only relatively powerful signals but also very weak high-frequency signals. This discovery by doctors W. K. Volkers and W. Candib of Schenectady, N. Y., may eventually explain often questioned natural phenomena such as telepathy and extrasensory perception, and may even add to our knowledge of hypnosis, say the researchers.

A chemical method of coating copper with plastics—of particular value for sealing transoceanic cables—was described by Dr. Arthur T. Spencer of Bell Telephone Laboratories. The bonding method forms chemical grippers on polyethylene plastic that cling to the copper, eliminating the need for adhesives.

Farmers will be interested in the "good quality, odor and acidity," together with increased flavor appeal and resistance to spoilage through fermentation, that may be imparted to silage or cold weather fodder for cattle. Treatment with an antibiotic called zinc bacitracin is the key, claims Dr. L. L. Rusoff of Louisiana State University.

The U.S. Army Signal Corps forsees future radios that are solid blocks which contain no tubes and no conventional wiring. They also predict that satellites which remain over a fixed spot on the earth will relay TV and radio descriptions from anywhere in the world to the Pentagon.

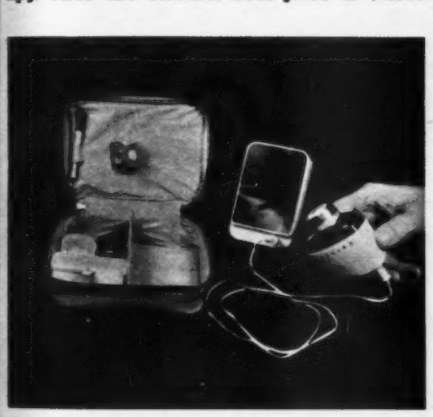
Many facets or abilities of human intelligence are still to be discovered, Dr. J. P. Guilford, University of Southern California psychologist told the National Academy of Sciences recently. Scientists know that intelligence is not just a single talent but as many as 55. The total, Dr. Guilford forecasts, may eventually be found to be 120 or more.

Boeing Airplane Co. plans to have an experimental model of a new supersonic aircraft ready to fly within three or four years. More than $4,000,000 has gone into the study of the model and estimates for a 1,200-mph craft in production run from $15-to-$18,000,000. A 1,200-to-2,000-mph plane constructed of heat-resistant steel would double costs.

—*J. Robert Connor*

NOW SEE THIS!

SAVIANO SCAT is a new lightweight utility vehicle produced by Saviano Vehicles of Warren, Mich. The two-door, four-passenger rig has an 80-inch wheelbase and weighs 1,700 pounds. The doors are removable. The Scat is powered by a 25-hp air-cooled engine. It has a three-speed transmission and a top speed of 50 mph. Gas consumption is 25 to 30 mpg. Tires are 5.90x15. Scat price is $1,390.



JAPANESE battery-operated dry shaver has a removable, five-blade rotary head. The kit also includes a manicure set with a cone-shaped carborundum filing wheel, a small felt buffer and stainless steel nail clippers. Three C-cell batteries are housed in the shaving-mirror compartment and under normal use will give from six to nine months of service, it is claimed. Tokoyo Shibaura Electric Co. Ltd. of Japan makes the $19.95 unit with a plastic zippered case. The Transistor World Corp., New York, N. Y., sells the shaver kit.

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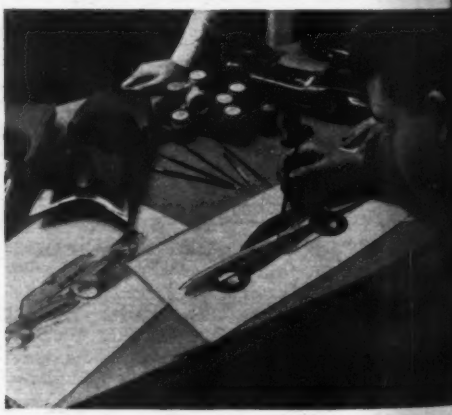
STYLIZED model won Bill (center) $4,000 scholarship award. Model is admired by fellow designers, Joe, left; Tom.

TEEN-AGE CAR STYLISTS

FERRAIOLI may be the coming name in auto design if three teen-age Brooklyn boys stick to their drawing boards. The brothers—Joe, 17, Bill, 15, and Tom, 14—are the sons of Mr. and Mrs. Joseph Ferraioli. The boys graduated from model kits to original auto designs and have won awards and scholarships ranging from $1,000 to $4,000. The proud parents think the best is yet to come. •

$2,000 scholarship in Fisher body competition went to Joe in 1958 for this design.

STYLISTS' workshop is in the basement of the Ferraioli home where designers create models. They do most of work after school.



SKETCH by 14-year-old Tom shows a rakish sports car design which he hopes will win award in the 1960 Fisher Body competition.

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UP TO $300 Extra Money. Show friends fabulous self-selling Evans Christmas Card, Gift line. Profits to 100%. Send no money—write for sample boxes to be paid for or returned, plus big Free Album Personalized Cards, 2 Catalogs 300 items. New England Art Publishers, North Abington 838-C, Mass.

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GET NEW Shirt Outfit Free! Make $90 weekly on 5 average orders a day. Famous quality made-to-measure dress and sport shirts, $3.95 up, sell fast to all men. No experience needed. Full or part time. Write: Packard Shirt Co., Dept. 215, Terre Haute, Ind.

WILL YOU wear new suits and topcoats without one penny cost and agree to show them to friends? You can make up to $30.00 in a day even in spare time, without canvassing. Pioneer Tailoring Co., Congress & Throop Sts., Dept. J-1226, Chicago 7, Ill.

MONEY-MAKING OPPORTUNITY! Take Big profit orders for world famous Patented Varieties Fruit Trees. Also Flowering Shrubs, Roses, Vines. Big Sales outfit Free. Stark Bro's, Desk 30181, Louisiana, Missouri.

MAKE UP to $50.00 a day soliciting delinquent accounts. Terrific commissions. Write today. General Finance, 304W Pickwick Bldg., Kansas City 6, Mo.

• • • BUSINESS OPPORTUNITIES

$250.00 WEEK SPARE time profit possible. Earn at home with new fascinating Printing method. $5 starts you—send no money now. Free Confidential Facts and Valuable sample. Screen-Print, AT, Los Angeles 61.

MI Classified Advertisements

WANTED: HOME producers, to be subcontractors. Cast plastic products for manufacturers in our Clearing House Service. Thousands of easily-made items required. Cash in at home, without previous experience. Plastic Service Associates, Dept. 8-MI, East Boston 28, Mass.

FREE! NAME Brands Catalog! Your own high profit business. Sell Name Brands, full or part time. No inventory—no investment. More than 2000 Name Brand items; lowest wholesale prices. Watches, jewelry, cameras, hi-fi, stereo, radiophonos., appliances, housewares, hardware, power tools, luggage, musical instruments, garden equipment, sporting goods, toys, many others. 8 Floors of Name Brands. Million dollar inventory. Orders shipped complete within 24 hours. Send for Free beautifully illustrated catalog Now! Separate wholesale price list. H. B. Davis Corp., Dept. 16, 145 West 15 St., New York 11, N. Y.

IF YOU Like Motorcycles And Money then send for Harley-Davidson Dealership Book on how to become a dealer of motorcycles and a new line of motor scooters. Here's a chance to own your own business with a very modest investment. The youth market is beginning to explode and the next few years promise a chance to cash in on it. Write for free illustrated Dealership Book today. Harley-Davidson Motor Company, Dept. MI, Milwaukee 1, Wisconsin.

$1.00 BRINGS YOU $18.00 Spare-Full Time Home-Business opportunity! Amazing new velvet-spray transforms old ¢¢¢¢¢ lamps, TV-radios, figurines, furniture—anything—into $$$$$ products! Free samples, 50 Business Opportunities Booklet. Send No Money. Flok-Kraft AT, Los Angeles 61.

OPPORTUNITY TO earn $15,000-$30,000 annually. Franchise protected. Granted on $12,500 basis. Live at home. No merchandise to buy. Selfemployed. One of most exclusive and noncompetitive Businesses in United States and Canada. Send for free explanatory booklet. Harrell & Company, Box 8-F, Louisville, Ill.

INCREDIBLE NEW "Table-Top" Machine manufactures over 15,000 saleable products. Also laminates, encases, moulds and plates in bronze, chrome, or copper. 20¢ materials produce $10.00 products. Free Confidential Details and Home-Business Plan. Plasti-Form, Dept. MI-8, Gardena, Calif.

DRAFTING PAYS Big Money . . . leads to top positions in automotive, aeronautical, construction, mechanical fields. Learn at home in spare time. All equipment supplied. Pay Later Plan. Free Book. Christy Trades School, CD-1006, 3214 Lawrence, Chicago 25.

IMPORT-EXPORT OPPORTUNITY, profitable, world-wide mail-order business from home without capital; or travel abroad. Established world trader ships instructions for no-risk examination. Experience unnecessary. Free details. Mellinger, Dept. C758, Los Angeles 24, Calif.

190 FRANCHISE OPPORTUNITIES in new franchise directory. $2.00 postpaid. Pilot Pub, Dept. M, 46 West 33, New York 1.

INVISIBLE RE-WEAVING; $5-$10 per job possible re-weaving burns, tears, mothholes. Spare-Full time. Free details. Skil-Weave, Dept. WC-360, 335 W. Madison, Chicago 6, Illinois.

COLORGLAZED CONCRETE pottery made without molds. Patented method. Cemetery products, novelties, files. Basement leaksealing. Money-making projects. Booklets, details free. Men only. National Pottery, Grand Rapids, Minnesota.

WANT TO Make Big Money At Home? $10.00 profit in an hour possible with Invisible Mending. Make tears, holes, disappear from clothing, fabrics. Steady year-round demand from cleaners, laundries, homes. Details Free. Fabricon, 6254 Broadway, Chicago 40, Ill.

NEW HOME-IMPORT Mail Order Profitunity! Your mailbox stuffed with money! No Selling. No experience. No investment. We supply everything. Free Details. Mail Order Distributors (Import Division), 15201 South Broadway, Los Angeles A3KC, Calif.

BRONZE BABY Shoes: Instructions, Equipment and Mountings for genuine Electroplating Process. Largest Supplier of all Plating Equipment, Supplies. Free Catalog. Hollywood Bronze Supply, Dept. B-5, 1624 East First, Los Angeles 33, Calif.

FRANCHISES MAKE Profits! Have your own prosperous franchise business. Opportunities nationwide for distributors, dealers, agency operators. Write today. National Franchise Reports, MI-528, 333 North Michigan, Chicago 1.

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MOTEL-RESORT MANAGEMENT—Qualify for hundreds fascinating, leisurely, well paid executive openings. Learn at home. Free booklet. Motel Managers Training School MI-2, 612 S. Serrano, Los Angeles 5.

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MARKETS EVERYWHERE. Make Artistic concrete birdbaths, pottery. Best coloring. Home workshop. Hundred varieties. Hollywood Cementcraft, 8527-E Wonderland, Hollywood 46, Calif.

GROW ORCHIDS at home. Profitable, fascinating. Successful home grower explains special light, temperature and humidity conditions orchids need. Free—full details. Orchids, 100 S. Vermont, Los Angeles 4.

BIG MONEY—Operate own Fix-it Shop. Service household appliances, motors, mowers, saws, skates, etc. Free Book. Christy Trades School, A-8906, 3214 Lawrence, Chicago 25.

FREE PICTURE Folder, "How to Make $3,000 Yearly, Sparetime, Backyard, Raising Earthworms!" Oakhaven-45, Cedar Hill, Texas.

YOUR ENVELOPES addressed accurately, reasonably. Fast service. We have capable addressers in your city. Glenway System, Box 6568, Cleveland 1, Ohio.

$70 WEEKLY—HOME, spare time. Simplified mail bookkeeping. Immediate income—easy! Auditax, 34757E, Los Angeles 34.

BECOME TAX Consultant. Graduates earn $1,000-$3,000 every tax season preparing returns evenings. State approved. Union Institute, Lakewood (5P), N. J.

NEW BATHROOM Deodorizer. Hangs on wall. Banishes odors bathroom, kitchen. Lightning seller. Samples sent on trial. Kristee 100, Akron, Ohio.

PIANO TUNING learned at home quickly. Tremendous field! Musical knowledge unnecessary. Be independent! Information free. Empire School of Piano Tuning, Champaign, Ill. (Founded 1935).

BAKE NEW Greaseless Doughnuts in Kitchen. Sell stores. Free recipes. Irving, 3605 South 15th, Minneapolis 7, Minnesota.

$34.70 TWO HOURS. Manufacturing Concrete Products. No Selling. Castings #6, 2907 Dundee, Rapid City, South Dakota.

VENDING MACHINES—No selling. Operate a route of coin machines and earn amazing profits. 32-page catalog Free! Parkway Machine Corporation, Dept. 2, 715 Ensor St., Baltimore 2, Md.

11,000 NEW PROSPECTS Daily. Baby record books, shoes, albums. Sell mail-order. Use our literature. Write: No-Co-Ro, Capitola 16, Calif.

PACKAGE AT Home For Profit! We supply everything. No selling, ready market. Free details. HPC, 2212E Jane Street, Los Angeles 23.

LEARN EXPERT Cake Decorating, Candy Making. Free Details to housewives! Candy & Cake, Dept. 725, Fallbrook, California.

LEARN SEWING Machine repairing. To $125 weekly. Sparetime. Supplies. Add to present business. Write today! Taylor Service, Box 2126, San Bernardino, Calif.

MINK RAISING information free. Complete. Lake Superior Mink Farm, Superior, E. E., Wisconsin.

PLATE BABY shoes, jewelry, gifts, bronze and colored pearl. We finance. Free booklet. Thomas, 11029 South Vermont, Los Angeles 44.

$3.00 HOUR—HOME, sparetime, assembling pump lamps. Easy. Free Details. Ougor, Caldwell, Arkansas.

BUY DIRECT from factories. Appliances, cameras, watches! Free details! Cam Co., 6810MI-20th Ave., Brooklyn 4, N. Y.

MAKE $46 FROM Square Foot Plywood; Jigsaw necessary. Free Details. Woodst, Bridgewater, Mass.

$200.00 MONTHLY. SPARE Time. With Tablesaw. Write. Holiday House, 7227 4th Plain, Vancouver, Washington.

FREE BOOK "990 Successful, Little-Known Businesses." Work home! Plymouth—611, Brooklyn 4, New York.

TURN YOUR Ideas, Inventions into cash. Ketchum's Advertising, 1058-BF, Springfield, Ill.

MONEY FROM Your Mailbox Daily. Free Details. Write Wayne's Service, 3016-12 Channing N.E., Washington 18, D. C.

RE-CAST JUNK batteries into new. Latest achievements. Battery Laboratories, Bayou LaBatre, Alabama.

LIQUID MOLDING Rubber, Free Sample Shellcraft Supplies. Chaney, 1907-B East Road, Jacksonville 11, Fla.

• • • HELP WANTED

FOREIGN JOBS—Latin America, Alaska, Canada, up to $1500 monthly. Up-to-date 1960 Foreign Service Directory gives complete information; hot list of firms hiring for Military and Civilian Construction, Aircraft, Oil, Exporters-Importers, Mining. How-When-Where to apply. 12th successful year. $1.00. Global Reports, Box 8873-MI, Los Angeles 8, Calif.

FREE INFORMATION — USA Overseas Jobs, High Pay. Transportation. Futures, Dept. L, 215 West 34th Street, New York City 1.

WORK IN Sunny Arizona. Information And Job Listings $2.00 P. P. Airmail Reply. Thompson Enterprises, P. O. Box 6561, Phoenix, Arizona.

WANTED, MEN, Women, Raise bait for us at home. Full, spare time. Doesn't take up space. We furnish everything. Sherwood, Dept. E-1, Monmouth, Maine.

MAKE EXTRA Money selling advertising matchbooks. Free catalog and sales outfit. Matchcorp. Dept. MI-80, Chicago 32.

JOBS ON Ships and Yachts traveling Foreign Countries. Davenport's, 1354-M, GPO NY 1, NY.

JOBS, SHIPS, $100 Weekly, Beginners, Seamans Service, Box 17-B, Brooklyn 8, N. Y.

• • • PROFITABLE OCCUPATIONS

VENDING MACHINES—No selling. Operate a route of coin machines and earn amazing profits. 32-page catalog Free! Parkway Machine Corporation, Dept. 16, 715 Ensor St., Baltimore 2, Md.

HIGH PAY Overseas, Domestic Jobs. Men, Women. Generous Benefits. Companies Pay Transportation. For info; write: World Wide, Dept. F2, 149 N. Franklin St., Hempstead, N. Y.

JOBS: HIGH pay. Foreign countries, USA. All trades. Write Dept. 55D, National Employment Information, 1020 Broad, Newark, N. J.

FREE PICTURE Folder, "How to Make $3,000 Yearly, Sparetime, Backyard, Raising Earthworms!" Oakhaven-3, Cedar Hill, Texas.

$5,000 FROM HALF Acre growing Ginseng, crop bought. Particulars 10c. Associated Growers, Sperling, Manitoba.

HYDRAULICS—A new high profit field. Write for details. Hydraulic Parts, Box 4104, El Paso, Texas.

AMAZING PROFITS manufacturing concrete drain tile. Cesten Products, Corsella, Ga.

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BE INDEPENDENT, Be Secure, Have Your Own Big Money Mail Order Business. Earn $10,000 and up annually. Start from home. Start small and grow big. We set you up—show you how—guarantee results. You never invest one cent in inventory. All orders shipped for you. Collect Cash In Advance. Exciting details free!! National Mail Order Corp., Dept. 12, P.O. Box 828, Preakness Station, Wayne, N. J.

MAKE MONEY Clipping Newspapers. Write Newscraft, MI-983-E. Main, Columbus 5, Ohio.

IF YOU Sell Christmas Cards, make most extra cash with lines of all leading companies from one firm. World's biggest line. Over 150 Christmas, Everyday box assortments, 400 big money-makers. Make up to 50% profit plus big cash bonus. Free giant color catalog of all lines; samples on approval. Arrow Greetings 513 Fourth Ave., S. Dept. 81-M, Minneapolis, Minn.

START YOUR Own Business On Credit (U.S. and Canada). Your own boss. 13% Dealers sold $5,000 to $25,500 in 1959. We supply stocks, equipment on credit. 200 home necessities. Sales experience unnecessary. Pleasant profitable business backed by world-wide industry. Write Rawleigh's, Dept. H-U-MOM, Freeport, Ill.

AFRICAN NIGHTCRAWLERS — 100 — $2.00, 500—$7.00 (Dealers Quoted). Ozark Worm Farm-4, Willow Springs, Missouri.

START BIG-PAY Business At Home in spare time. No experience needed to operate little table-top machine for bronzing baby shoes. Make $5.46 profit on every pair. Full particulars free. Send postcard to Mason, 1512 Jarvis, Room CM-4-H, Chicago 26, Ill.

EARN $240.00 A Month at home, spare time doing only Two $5.00 Invisible Mending jobs a day. Big money paid for service that makes cuts, tears disappear from fabrics. Steady demand. Details free. Fabricon, 6256 Broadway, Chicago 40, Ill.

MAKE EXTRA Money—Big Cash Commissions plus premiums for you and your customers. Sell Advertising Book Matches —sensational new Tenorama, Glamour Girls, Hillbillies; dozens others. All sizes —Quick daily sales; big repeat business. Free Master Kit makes selling easy—no experience necessary. Superior Match, Dept. FX-860, 7530 Greenwood, Chicago 19.

MEN-WOMEN! START Money-Making Plastic Laminating Business at home in spare time. Material that costs 11¢ brings back $2.58. No canvassing or selling but mail orders bring in $20 a day. Write for full particulars Free. Rush name on postcard to Warner, Room CL-4-H, 1512 Jarvis, Chicago 26, Ill.

MAKE $50 SPARE Time Cash on 50 boxes new Lustrecolor name-imprinted Christmas Cards, other money-makers. Profits to 100% plus bonus. Samples sent on approval; Free Sample Album, Free promptness gift. Southern, 478 N. Hollywood, Dept. A-508, Memphis, Tenn.

VENDING MACHINES—No selling. Operate a route of coin machines and earn amazing profits. 32-page catalog Free! Parkway Machine Corporation, Dept. 15, 715 Ensor St., Baltimore 2, Md.

BECOME INDEPENDENT with your own franchise business. Thousands earning handsome incomes. Request interesting facts today. National Franchise Reports, MX-528, 333 North Michigan, Chicago 1.

BUSINESS OF your own. Earning potential as high as $40,000 annually. Issued on $12,500 base. No merchandise to buy. Send for free explanatory booklet. Harrell & Company, Box 8-FF, Louisville, Ill.

MAIL LETTERS Featuring Real Merchandise—Get $10 orders in every mail—$8 profit. Everything furnished. Write: The Malleretto, 1502 South Lowell, Santa Ana, California.

EASY TO start Rubber Stamp business at home in spare time. Make up to $9.80 an hour without experience. Facts Free. Write Roberts, 1512 Jarvis, Room CR-4-H, Chicago 26.

$1,000.-$10,000. YEARLY POSSIBLE, raising Fish Worms! Full, sparetime; backyard, garage, basement, spare room. Sell your crop to us! Send name to: Red Wigglers, Warsaw 8, Indiana.

FACTORY FRESH Watches. $1 monthly. Old taken. Duzeski Sons, 1219 21st, Manitowoc, Wisconsin. Please acknowledge.

ATTENTION! MEN, Women! Earn extra cash, address advertising postcards. Langdons, Box 41107-M, Los Angeles 41, Calif.

PROFIT UNLIMITED Selling Advertising Lighters. Details Free. Sample $1.00. Lepden, 710 Dora, Jacksonville 4, Florida.

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NEW DELUXE wholesale Catalog, automobile catalog, and others. Housewares, appliances, refrigerators, freezers, washers, dryers, television, radios, furniture, clothing, luggage, binoculars, phonographs, recorders, cameras, projectors, typewriters, power tools, toys, sporting goods, watches, jewelry. Name brands. Huge discounts. Postcard (any card): Selbyco, Decatur 135, Illinois.

LARGEST WHOLESALE supply in U. S. Free catalogs. Furniture, clothing, appliances, housewares, automobiles and accessories, farm equipment, tools, hobby supplies, new products, imports. Free details. Associated Wholesalers, Box 2068M-2, Sioux City 4, Iowa.

BUY WHOLESALE! Big catalog! Postcard: Spartan, 12368 Winona, Chicago 40.

TRANSISTOR RADIO Bargains. Free Literature. Kalenak, 1100 Heeney, Johnstown, Penna.

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JEEPS—$223.00, TRUCKS—$212.00, Tractors—$68.00, Tools, Guns. Typical Government Surplus Prices. Buy Direct. List Of Depots, Procedure, Full Details Only $1.00. New York Enterprises, Wall Street, Box 402-H7, New York 5.

• • • CHEMICALS & SUPPLIES

EXPERIMENTERS: NEW! Bigger Catalog and "Experiments Booklet." Only—25¢. Hagenow Laboratories, Manitowoc, Wisconsin.

232 PAGE CATALOG $2.00. Laboratory Materials, 7319 Vincennes, Chicago, Ill.

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EXCLUSIVE MANUFACTURING Formulas and Processes. List Free. Moon, Martville, N. Y.

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GOLD-SILVER DETECTORS. Latest types. Five models including transistors. Violites for tungsten, etc. Geiger Counters. No finer instruments anywhere. Free information. Detectron, Dept. 8-A, Sylmar, California.

TREASURE! MAP, Handbook, 25¢. Locators. Howe, 811 Kansas, Atchison, Kansas.

MI Classified Advertisements

SEARCHING FOR Treasure? Transistorized electronic M-Scope locates it. Lightweight. Guaranteed. From $59.50. Easy Terms. Free Catalog. Fisher Research, Dept. C-4, Palo Alto, Calif.

TRANSISTOR TREASURE Detectors, underwater detectors. Many models. Free catalog. Gardiner Electronics Co., Dept. 3, 2545 East Indian School, Phoenix, Ariz.

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REAL FIVE inch heels—beautiful opera pumps—dollar brings picture and details. Ruspee, Box 209, West Hartford 7, Connecticut.

LADIES: EARN up to $2.00 hour sewing babywear! No house selling! Send postcard to Cuties, Warsaw 58, Indiana.

MAKE $25 TO $35 weekly addressing envelopes. Our instructions reveal how. Glenway, Box 6568, Cleveland 1, Ohio.

• • • EMPLOYMENT INFORMATION

AMERICAN — OVERSEAS Jobs. Higher pay. Transportation. Men-Women. All occupations. Further details, write: Employment Headquarters, 79 Wall Street, Dept. 19-A, New York 5.

JOBS IN Nation's Capitol Unlimited. For complete list send $1.00. Herfs, Box 10113, Washington 18, D. C.

• • • PRINTING, MULTIGRAPHING, MIMEOGRAPHING

1,000 BUSINESS CARDS, "Raised Letters" $3.95. Samples. Pioneer, MI-8, Island Park, N. Y.

COLORED OR White 8½x11 Offset $6.50—1000; $18—5000. Fast! Glaser, 8 West 45 St., New York City 19.

BUSINESS CARDS (Raised Letters) 500—$2.50, C.O.D. Samples Free. Picha, 27600 I Joy, Livonia, Michigan.

1000 BUSINESS CARDS, "Raised Letters" $3.75 postpaid, Samples. Routh, 2633 Randleman, Greensboro, N. C.

RUBBER STAMP Manufacturing Machines, Supplies. Helms Stamp Co., Bristol, Tennessee.

• • • PRINTING OUTFITS & SUPPLIES

PRINTING OUTFITS, type, supplies. Send dime for illustrated supply book and samples. Kelsey, Inc., H-57, Meriden, Conn.

HOBBY PRINTERS: Exchange hobby papers through National Amateur Press Association. Details. Stan Oliner, 570 West Ithaca, Englewood, Colorado.

MAKE YOUR Own self-molding rubber stamps and printing cuts. Plexirubber, Argyle 3, Wisconsin.

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508 DIFFERENT WORLD-WIDE from Formosa, Morocco, Indonesia, etc., cataloging over $15.00, only 35¢. Offer to Adults Only. Approvals. Littleton Stamp Company, Littleton Q4, New Hampshire.

FANTASTIC FISH Triangles!! Valuable "Ben Franklin" on Canal Zone!! Flaming bi-colored Volcano Triangle!! Lovely Olympics Triangle!! Plus Icy Greenland, Weird Wild Beast issue and others, 10¢ with approvals. Ozark Stamps, Spring Lake 5, Michigan.

200 DIFFERENT BELGIUM 50¢—Penny approvals included. Reed, Box 980, Chicago 90, Ill.

TERRIFIC STAMP Bargain! Israel—Iceland—Vatican Assortment—plus exotic triangle set—Also fabulous British Colonial Accumulation — Plus large stamp book—All four offers free—Send 10¢ to cover postage. Empire Stamp Corp., Dept. MI, Toronto, Can.

VATICAN CORONATION Souvenir—Pope John XXIII card and 10 attractive stamps in protective plastic folder. Story of Vatican and coronation on reverse. A beautiful addition to any collection. 25¢ with approvals. Capital Stamp Co., Ferrysburg 58, Mich.

WILL ROGERS Air! Helicopter Triangle!! Plus Monte Carlo Dove Triangle! Stamp printed in Solid Gold! New York Empire State Bldg. airmail, lovely Congo Orchids in full colors, etc. 10¢ with approvals. Sunny Stamps, Apopka 5A, Florida.

FREE! GIANT Bargain Catalog—New Edition listing thousands of bargains including U. S. and B. N. A. stamps, packets, mixtures, albums, accessories and supplies; sent with beautiful approvals. Jamestown Stamp, Dept. E80MI, Jamestown, New York.

500 WORLDWIDE FOR 25¢! Contains U.S.A., Russia, First U.N., Summit Conference, Olympics, Space Satellite,—hundreds more! Approvals, illustrated offers included. Horace Gatewood, Winston-Salem, North Carolina.

225 STAMPS FOR Only 10c! This mammoth value includes Airmails, Pictorials; stamps from strange Countries cataloguing up to 25c each! Also approvals. Mystic Stamp Company, Camden 30, N. Y.

SPECIAL! OLD U. S., flags, Famous Americans, Presidents, commemoratives with approvals plus free packet, 10¢ handling. Metropolitan Stamps, Box 312EX, Jackson Heights, N. Y.

WOW! 110 ALL Different Germany 10¢! Zeppelins, Semi-Postals, Airmails, High values, etc. Giant Catalog, bargain lists included with beautiful approvals. Jamestown Stamp, Dept. A80MI, Jamestown, N. Y.

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UNITED STATES commemorative collection containing 33 different—10¢. Approvals. White, 516-M Avenue L, Brooklyn 30, New York.

FREE ONE Half Pound Of United States Mixture With Approvals. Send 20¢ for postage. Wm. Rice, 87 Washington Ave., Kingston 61, N. Y.

OLD SCARCE U. S. Seconds On Approval. Slight imperfections, lowest prices. Hernfelder, Clintonhill Sta., Newark 8, N. J.

DIAMOND, TRIANGLE, Timor, Topicals, Others. 44 different, 10¢ with approvals. Carpenter, P. O. Box 310, Claremont, Calif.

GODS OF Ancient Greece; Egyptian Jets; Old U. S. Commemorative Sets; U. N.; Others free when buying approvals. Stamp Farm, 13-20, Oxford, Wis.

1000 DIFFERENT $1.00 (value $20.00) approvals. Jacobsen, Crompond, N. Y.

U. S. STAMPS. Giant Discount Catalog-20¢. Raymax, 37VL Maidenlane, NYC 38.

105 BRITISH COLONY Stamps, all different, 10¢. Approvals. Crown Stamp Company 903, Virgil, Ontario.

14,000 DIFFERENT! AMAZING new plan builds your collection systematically, country by country. Only 50¢ weekly. Free details. L. G. Ware, Stepney 22, Conn.

30 LARGE U. S. Commemoratives Free. Approval applicants handling 10¢. Jack Clancy, Box 2187, Portland 14, Oregon.

103 DIVERSIFIED BRITISH Colony stamps only 10¢. Approvals. Niagastamp, St. Catharines 673-A, Ontario.

1000 DIFFERENT WORLDWIDE Stamps $1.00. Valued over $20.00 Universal, Box 6, Kenosha 10, Wisc.

ALBUM! HUNDREDS of Spaces! Only 10¢. Postpaid! Stampmart, Hartford 1, Connecticut.

100 DIFFERENT U. S. Commemoratives 50¢, approvals included. Shelron, Box 907-R, New York 8, N. Y.

25 DIFFERENT COMMEMORATIVES 1893 up 10¢. U. S. Approvals. K & B, Box 70 Brooklyn 23, N. Y.

FREE! UNUSUAL "animal" packet. Request approvals. Dancer, B75-X7, Mansfield, Ohio.

WORLD MIXTURE 10¢. C-M Stamps, 1909 Capitol Ave., Sacramento 14, California.

25 DIFFERENT LARGE American Commemoratives. 10¢. With approvals. Linstamp, St. Catharines 620-A, Ontario.

100 OLD UNITED States between 1861 and 1935, $1.00. Roush Stamps, 51 Chestnut, Mansfield, Ohio.

PENNY APPROVALS; Regardless. Catalogue! Kloster, 4144 52nd St., San Diego 5, Calif.

100 STAMPS 10¢ WITH approvals. Smith, 508-D Brooks, College Station, Texas.

NUDES SET (4)—unusual approvals—10¢. Atlasco, Eisenhower, Racine, Wisconsin.

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WANTED WAR Relics, From Revolutionary War, Civil War, Spanish-American, W. W. I, W. W. II and Korean War. Type or write descriptions clearly. Don't send articles. Michael Sutton, 2123 North Charles Street, Baltimore 18, Maryland.

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OFFICIAL ALASKA, Hawaii medals, each $4.50. Your name in Gold on 1961 Guidebook $2.25; World Coin Book $4.50. World's Greatest 96-page Bargain Catalogue $1.00. Bebee's, 4514 North 30th, Omaha 11, Nebraska.

SIX DIFFERENT Indians $1.00; Free List. Collector's Bargains, Box 356G, New Hope, Pa.

LINCOLNS, 30 DIFFERENT 1909-1939, $1.50. Nelson, Box 4176A, No. Las Vegas, Nevada.

LARGEST, MOST respected coin newspaper semi-monthly, sample 25¢, $2.00 yearly. Numismatic News, 120 Water St., Iola, Wisconsin.

8 DIFFERENT INDIAN Cents $1.00. 6 different Liberty Nickels $1.00. I. Doktor, P. O. Box 35151, Los Angeles 35, Calif.

INDIAN HEAD Cents, two different only 20¢. Approvals. Littleton Coin Co., Littleton R4, New Hampshire.

FREE BONUS Offer! U. S. bargain list, 10¢ (refundable). Economy Sales Company, Mansfield, Massachusetts.

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CERTAIN 1913 NICKEL $9,000.00. We paid $6,500.00 for Silver Dollar. $2,300.00 for Cent. Wanted Certain Dates —Cents before 1932—$2,000.00; Nickels before 1940—$275.00; Dimes before 1943—$4,000.00; Quarters before 1933—$1,500.00; Half Dollars before 1929—$4,000.00. Canadian Coins—1921 Nickel $200.00. 1921—50¢—$1,000.00. Wanted—Gold Coins, paper money, etc. Thousands of coins we paid $20.00 to $1,400.00 each. Others worth up to $25,000.00 each. For complete Allcoin information, before sending coins to sell, purchase our Large Illustrated Guaranteed buying—selling Catalogue—$1.00. Catalogue Dollar Refundable. Thousands of persons have sold us coins. Incorporated 1938, Worthycoin Corporation (K-433-C), Boston 8, Massachusetts.

OLD COINS Bought. Illustrated Catalog 25¢. Hutchinson's, Box 4747, Philadelphia 34, Penna.

• • • HOBBIES & COLLECTIONS

AMAZING INTRODUCTORY offer: 10 different foreign military emblems, only $1.50; 30 different countries, special $3.75. Foreign medal catalog 25¢; American catalog 25¢. Hobbies, Box 71-M, Rockaway 94, N. Y.

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MEN, 17 TO 45. Train Now As Heavy Equipment Operators. Enormous nationwide highway and building program has careers for thousands of men. No interference with present job. Full, practical training with latest machines following completion of preparatory instruction. Information Free, No Obligation, write to Heavy Equipment Training, Universal Schools, Dept. U-14, 11 E. 47 St., N. Y. 17, N. Y.

HIGH SCHOOL At Home in spare time with 63-year-old school. No classes. Standard high school texts supplied. Single subjects if desired. Credit for subjects already completed. Progress at own speed. Diploma awarded. Information booklet free . . . write today! American School, Dept. XC28, Drexel at 58th, Chicago 37.

WANT A Diesel Job? Higher pay? Advancement? We can help you qualify! Complete Diesel, Tractor and Heavy Equipment and Cummins Diesel Engine Shop-method home-training courses available. Write today. Interstate Training Service, Dept. B-4, Portland 12, Ore.

PIANO TUNING Pays. Big money in spare time. Learn at home in 30 days. No musical knowledge necessary. Phonograph, records, tools and instructions furnished. Personal instructions available. Free catalog. Capital Tuning School, 3160 S.W. 16th Court, Ft. Lauderdale, Fla.

HIGH SCHOOL at home. No classes. Texts furnished. Diploma awarded. If 17 or over and left school write for Free assignment and catalog. Wayne School of LaSalle Extension University, A Correspondence Institution, Dept. 165 WC, 419 S. Dearborn, Chicago 5, Ill.

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USED AND new watches $2 up. Free List. Southern Watches, 5-M South Wabash, Chicago 3, Ill.

WATCH AND clock repairing books. Free catalog. North American, 2320-CV Milwaukee, Chicago 47, Ill.

• • • TOBACCO, PIPES

OUTSTANDING CIGARS From Tobacco Growers. Write for free sample. Hudson, Westfield, Mass.

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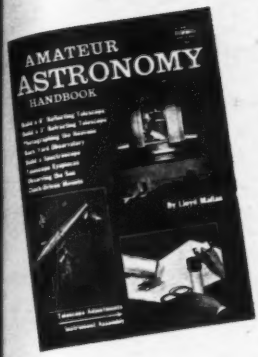

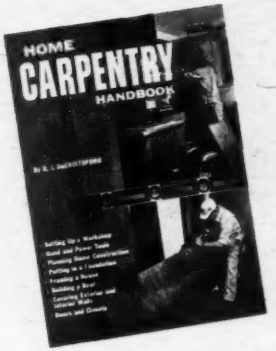

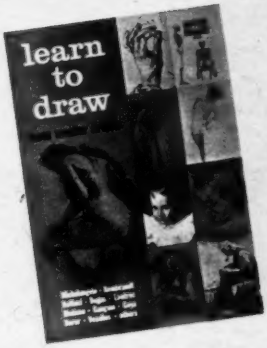

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A FAWCETT HOW-TO BOOK 75¢

AT YOUR LOCAL NEWSSTAND, LEADING DRUG STORE, SUPER MARKET, HARDWARE STORE AND BUILDING SUPPLY DEALER

Twice as many State Police cars use Champions . . .

All U. S. fire engine manufacturers use Champions . . .

Every major U. S. outboard maker uses Champions . . .

Twice as many car manufacturers use Champions.

Q. Why do the experts, in field after field, where performance is vital, choose Champion spark plugs?

A. Because they know they can depend on Champions to deliver every bit of performance from every drop of gas. Your car will perform better, too (and save money on gasoline) with new Champions. Put in a set every 10,000 miles!

Worn spark plugs waste lots of gas—so check your plugs every 5,000 miles!

CHAMPION

MAIL FOR McCAHILL

UNCLE TOM ANSWERS HIS MOST INTERESTING LETTERS IN THIS COLUMN. WRITE TO HIM AT *MECHANIX ILLUSTRATED*, 67 WEST 44TH ST., NEW YORK 36, N. Y.

● *I recall with much nostalgia the old steam rollers used years ago, complete with all the polished brass and bronze and the glowing fire box, etc. They stood very tall and were huge affairs. My interest is in acquiring one of the old-fashioned monsters. I rather imagine that most of them have gone the way of the steam locomotives. If you could give me any sort of a clue as to where I might start looking for one of these oldies I would be very appreciative.*

Hart W. York
17356 Miller
Fontana, Calif.

I recall the old steam rollers very well but haven't seen one in years. However, one of our readers might just happen to know where you could pick one of these up (get that "pick one up!"). Readers, if you do, write to Mr. York direct.

● *I get a kick out of some of these TV whodunits where the police get a flash that a guy is sticking up a store, the cops jump in a squad car and turn on the sirens wide open ten blocks away so that all but a totally deaf crook will be alerted and given plenty of time to escape before the gendarmes close in. Is this a TV booboo or do the cops really do it this way?*

Jerry (A student stick-up artist)
Denver, Colo.

Today in most major cities the cops get to the spot of the action as quickly and silently as possible. However, this was not always true. Twenty-five years ago during the Prohibition Era when hoods were really tough they would think nothing of machine-gunning a police car. Many a riding flatfoot flipped on his siren the minute he got a call, praying that the crooks would hear him first and take it on the lam so there wouldn't be a shoot-out. As one top New York City detective once told me, "At these wages who wants a hole in the head?" He always used his siren in the old days, to warn the crooks off.

● *Why are so many states reluctant to have stiffer driving examinations? Many licensed drivers, including some I know personally, are not fit to drive on major highways. Is this some sort of political football?*

Harry Robb
Baltimore, Md.

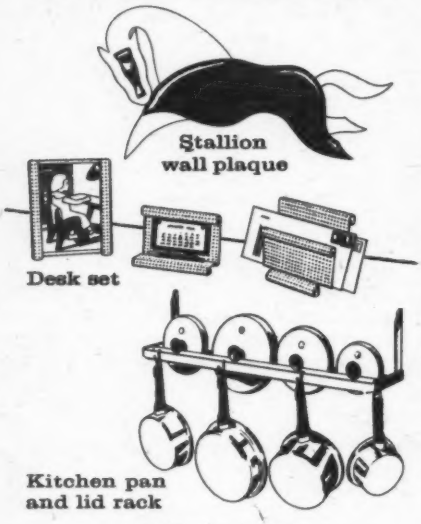
Harry, you've come pretty close to hitting it on the head—with one added factor. The hard truth is that about 30-40 per cent of our licensed drivers are incompetent and shouldn't be allowed behind the wheel of an automobile. However, if all incompetent drivers were forbidden to drive, here's what would happen: Auto sales would be cut by at least 25 per cent which would mean economic disaster. Oil and gas sales would be sliced an equal amount—and this would also go for tires, batteries, steel, glass and pretty close to anything you can name, including motels and jerk towns that depend on violation fines to support the local constabulary. It would be a helluva mess financially but undoubtedly a lot of lives would be saved.

Out of the 30-40 per cent that are incompetent today I feel certain that under real government pressure better than half of these could be forced into becoming good drivers with proper guidance. But at least 12-15 per cent could never make the grade if driving tests were really honest, because of mental and emotional blocks. Our choice is: Live rich and dangerously or starve safely.

● *The word "boy" is not English; the correct English word for boy is "lad." The word "boy" found its way by misfortune into English from the Slavic languages, so when you call your dog "Boji Boy" you're talking Russian or Polish or Lower Slobbovian to him. You shouldn't use such vile language even on a dog.*

[*Continued on next page*]

Make 'em yourself in ONE EVENING



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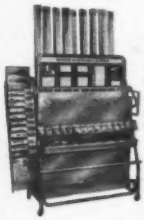
Make any of these handsome, useful aluminum articles in just one evening. Use ordinary woodworking tools. It's fun, it's satisfying . . . and we furnish free step-by-step plans (see coupon).



Look for this rack at most hardware and building supply stores.

sheets, tubing, tubing fittings, window and screen frame sections, fasteners, rod, bar, angle

Reynolds Metals Co. · Richmond 18, Va.

Please send Do-It-Yourself Aluminum How-To booklet with free one-night project plans.

Name_____

Address_____

City_____ Zone_____ State_____

Dept. MI

Mail For McCahill

[*Continued from page 49*]

Remi W. Pellikka
Winton, Minn.

As one Irishman to another, I'll personally drop a note to Gainsborough's Blue Boy and tell him about this!

● *I was telling a classmate about my physics project which was a cross-section of a double-barrel carburetor. He started to laugh and said it wasn't a double-barrel but a "dual-throat" carburetor. Am I right in saying it can be called either? If not, I am a stupid girl and will keep my mouth shut.*

Jane Reed
Marshalltown, Iowa

According to Webster's Dictionary, you would be perfectly correct in saying double-barrel carburetor, dual carburetor or two-barrel carburetor. Your pal said it was a "dual-throat" carb—well, personally I've heard of a lot of four-barrel carburetors but I haven't heard of a "four-throat" one yet. For my dough you are right, Jane—stick to it!

● *At present am driving a Plymouth Fury and find it just as fine a car as your article said it was. The only beef I have is that the stainless steel and chrome rust so badly. There is a sulphide paper mill a few blocks from where I live and between the fumes from it and the salt spray from the Pacific Ocean where most of my work is conducted, the chrome rusted through and the paint blistered. Just as soon as the paint would blister, the spots started rusting. In the December issue of MI you mentioned an inhibitor called CRC—would it protect only the chrome? Do you know of any kind of spray that would protect the paint from lime and sulphur fumes? Have tried almost every kind of wax but the lime particles just seem to adhere tighter to the paint when waxed.*

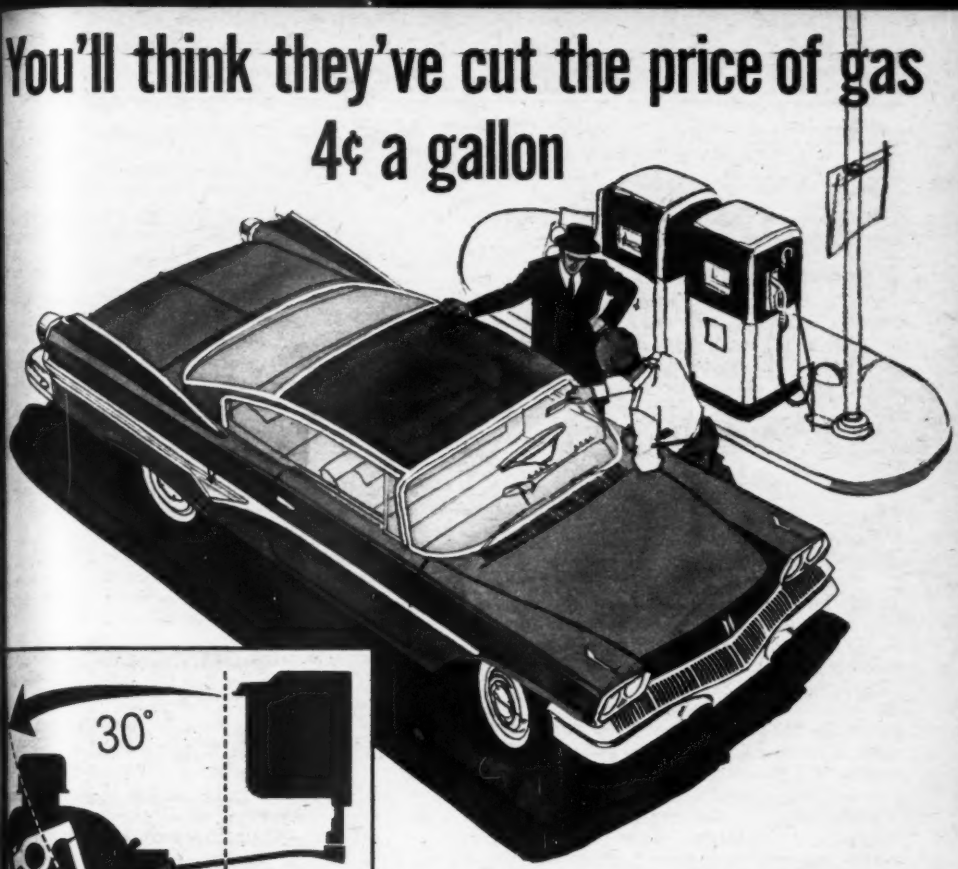
John M. Jones
Toledo, Ore.

Personally, I use CRC on just about everything—my cars, boat, guns, and I even spray the guts of my TV set with it. This is *not* a payola plug—I just found it the best thing I've come across.

● *In our Social Science class at school we are studying what we are looking forward to in the future when we get out of school. Why I am writing you is that I would like very much to became a test driver and road-test cars the way you do. I have to do some research in class for the occupation I am choosing, hence this letter to you since I*

[*Continued on page 52*]

You'll think they've cut the price of gas 4¢ a gallon

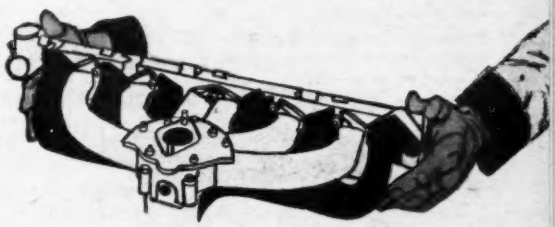


NEW SIX GIVES YOU 20% MORE PASSING POWER, SAVES 15% MORE ON GAS (LIKE PAYING 4¢ LESS A GALLON).

INCLINED AT A 30° ANGLE, this new six allows room for a bigger manifold system that boosts economy, cuts engine effort. Overhead design permits use of larger intake and exhaust valves for freer breathing, more efficient use of fuel. Equipped with the new standard low axle ratio, engine produces fuel savings in the important cruising ranges with plenty of torque for passing in all speed ranges. Output: a healthy 215 lb.-ft. at 2800 r.p.m.

OVERSIZE MANIFOLD SYSTEM. Six individual, heat-aluminum intake pipes feed fuel and air to each cylinder. Six low-restriction, gradually curved exhaust pipes take out burned gases fast. Design gets efficient, uniform performance from all cylinders—prolongs engine life.

Available in Plymouth and Dodge Dart models (with a smaller version in the Valiant). A drive will bring out the difference good engineering makes.



The Quick, the Strong, and the Quiet from **CHRYSLER CORPORATION**

VALIANT • PLYMOUTH • DODGE DART • DODGE • DESOTO • CHRYSLER • IMPERIAL

[Continued from page 50]

cannot interview you personally.

David Twiney
Fresno, Calif.

My advice is to get a good, steady job—like an undertaker in a retirement town.

● *I finally caught you in a goof. You stated that the cam lobe lift on the intake side of the 1959 Edsel with the 292 engine should be .385. You should have said .285, which is correct. Admit you're wrong!*

George O'Marra
Springfield, Mass.

George, old boy, as I have never written a word in my life about the cam lift of an Edsel, you must be thinking about three other guys. Besides, you're wrong. On the 1959 Edsel 292-cubic-inch engine the lift on the intake side should be .272; .285 is for the exhaust side. *So there!*

● *Late for work the other morning, my husband hurried into the garage, jumped in the car and then there was a big bang. He'd forgotten to open the garage door and in backing out he pulled the door off and ran over it. Here's the hassle we've been having ever since: He claims he opened the door but the wind blew it shut. There are only a couple of things wrong with this story. First, it's an overhead door; and second, there wasn't any wind blowing. In the four years we've owned our house, the garage door has been open many times in very strong winds and never once closed by itself. He is adamant and the argument has been going on for ten days. What do you think I should do?*

Gertrude B.
Bayside, N. Y.

Give him a great big "E" for effort. It takes guts to stick by a story when you know you're wrong.

● *Just read your report on the '60 Olds and was struck by the statement, "My car was loaded to the gunwales with heavy luggage, two dogs and my wife." A series of articles in a sentence should be separated by commas to clarify the meaning—or were you describing the heavy luggage as being the two dogs and your wife?*

Onus M. Comer
Novato, Calif.

What else?

● *I have always wanted to become a race driver. My mother tells me I'm crazy. My father says he'll disown me. Could you tell me where I could learn without going through the school of hard "wrecks"? Is there any manual published on the gimmicks of race driving? I guess I'm an adventurer at heart.*

James R. Dunlop
South Attleboro, Mass.

I've never recommended that anyone become a race driver. As a means of making a living it's one of the worst careers you could choose. For every thousand race drivers, not more than eight or ten make decent money and the mortality rate, even among the best, is extraordinarily high. In my latest book, Today's Sports And Competition Cars (which can be bought or ordered at any good book store), I cover the subject of competition driving—especially how to do it—but even in this book I advise against race driving as a career. The odds are too great against you.

● *We used to own a '49 Chrysler New Yorker which we used as a beach car at our summer place. After coming back from the winter we found two mice in the glove compartment which was locked and had no holes in it. This happened two years in a row. Bet you can't explain this.*

Jeff Willis
Newton, Mass.

Something must be laying the mice eggs in there.

● *Could you please tell me the approximate amount of dough I could save if I went directly to the Caddy Division of General Motors to buy a convertible instead of buying it from a local dealer? If you answer this, be serious because I am.*

Bob Alton
Mystic, Conn.

The last new Cadillac I bought was picked up at the factory by me but I had to pay full price to the New York Cadillac dealer for it. If you can make a deal by going to the factory, it's news to me.

● *What car produced in the past ten years will have a chance to take its place alongside the collector's items and grow in value? In other words, what will be the Stutz Bearcat, so to speak, 25 years from now?*

E. C. Meadows
Chinle, Ariz.

The Chrysler 300 is the only American car I know that could qualify.

● *After many long hours of thought, I've come to the conclusion that the idiot lights used in today's dashes were developed*

[Continued on page 54]

TRIPLE EXPOSURE at *f*11 is how our Speed Graphic caught this fellow flexing his muscles. Just try this exercise yourself. See how fast you tire out. When you do, remember that *tires* do 700 "push-ups" per mile as they roll along under your car.

Too much flexing wears out people...and ordinary tires! But not

THE TIRE THAT DOESN'T GET TIRED

New *Low Profile** tire is actually made lower and wider so it flexes less, lasts longer.

Excessive flexing is what wears out, burns out tires, weakens rubber and fabric, increases blowout danger. And ordinary tires do flex excessively.

But U. S. Royal has pioneered a new "Low Profile" shape tire that *flexes less, runs cooler, lasts longer*. It offers new protection against high-speed failure and heat blowouts.

Other tire designs don't give such thorough protection. Yet "Low Profile" tires cost no more than ordinary tires. So don't run the risk of tire failure. See the *complete* line of U. S. Royal "Low Profile" tires—now in 5 price ranges for every make and model car—at your U. S. Royal Dealer.

Excessive flexing pushes the temperature of ordinary tires above 240°F. That's the danger mark. But the lower, *wider* shape of U. S. Royal "Low Profile" tires reduces flex, keeps tires *cooler*, even at top highway speeds.

**"Low Profile" is United States Rubber Company's trademark for its lower, wider shape tire.*

PIONEERED BY U. S. RUBBER AS THE ANSWER TO GREATER TIRE SAFETY AND LONGER WEAR

U.S. ROYAL *LOW PROFILE** TIRES

United States Rubber

Rockefeller Center, New York 20, N. Y.

Mail For McCahill

[*Continued from page* 52]

because the developer wasn't intelligent enough to read a needle on a dial. I have heard that even a chimpanzee can react to a flashing light.

William L. Fuller
Los Gatos, Calif.

We get the point; many of today's drivers are closely related to chimps.

● *In the February issue of MI in your Pontiac test you mentioned a new gimmick called Magi-Cruise which you claim is the poor man's version of the Auto Pilot. I bought my new Pontiac in November and when I took it back to my dealer and asked if he could install this device on my car, he said he never heard of it. Is this a regular Pontiac part or not?*

Charles Testa
Los Angeles, Calif.

Your dealer sounds like a stupe. It is a regular Pontiac accessory. Jim Stephens, the Daytona Beach dealer, told me recently three out of every four Pontiacs he's sold this year had the Magi-Cruise installed. I ordered one for my Chrysler 300 from the L. G. Arpin Company of Caldwell, N. J., who manufacture the Magi-Cruise. I find it not only saves gas but it cuts the driving effort in half on long trips.

—*Tom McCahill*

EMERGENCY WINDSHIELD WIPER

If your windshield wipers conk out during a rainstorm rub a wad of cigarette tobacco over the glass. Tobacco acts as a wetting agent, prevents water drops from forming.

NOW SEE THIS!

MOCK UP shows new General Electric fuel cell power pack being developed for U. S. Marine Corps and Army. Unit will weigh 30 pounds and produce 200 watts of direct current at 24 volts. The device will be used to operate electronic equipment in the field. Replaceable canisters will produce fuel for 14 hours. Note bottom section cutaway showing the fuel cell.

SEA FALCON is a plastic fun boat for young water lovers. It weighs about 14 pounds, is 61 inches long, 33 inches wide, ten inches deep with three-inch diameter bumper float. Sea Falcon will float up to 250 pounds and it cannot be sunk, according to the maker. Boat is $40. Optional sail, mast and paddle: $10. Leisure Industries, Forest Hills 75, N. Y.

[Continued from page 29]

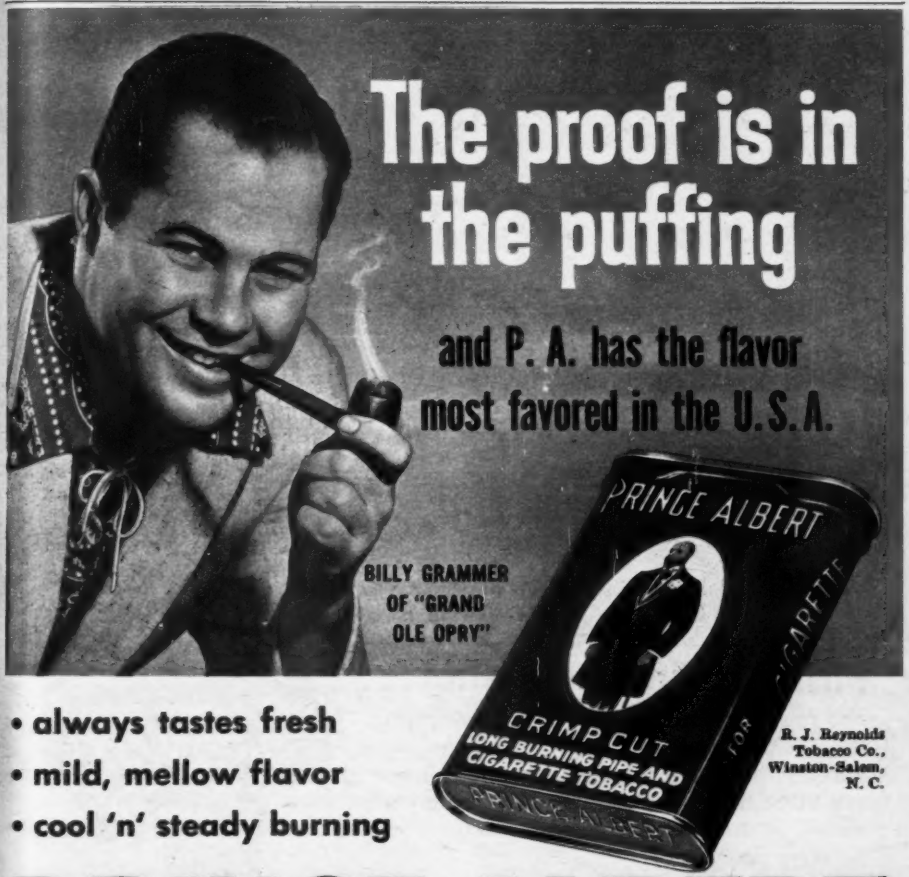
for removing the polluted air. Is it worth promoting?

Anything which will be an answer to the smog problem in Los Angeles is worth promoting if workable and economically sound. The cost of installation and operation of your system would bankrupt the county. Try to calculate the mass of air which needs to be moved, how much power is required to do so, how much more power is needed to handle the vast quantity of sea water which will be needed. Then add to this costs of construction and depreciation.

Magnet Motor

Gus A. Miller of Ottumwa, Iowa, says he has discovered a basic idea and produced a model of a permanent magnet motor which actually runs on its own power. Could this be patented?

Probably, but only if you can show the working model which you claim to have. My doubt is based on examination and study of hundreds of devices in which permanent magnet motors just didn't work. •



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• mild, mellow flavor
• cool 'n' steady burning

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Firmer—Finer—Fresher...

And you enjoy the smooth flavor and mildness of Roi-Tan's finer quality tobaccos *all the way.* For every puff comes through the remarkable new STA-FIRM HEAD free and easy—right to the end! Have a fresh new Roi-Tan today—there's a size for every taste.

MAN TO MAN...SMOKE A *New* **ROI-TAN**

AMERICA'S LARGEST-SELLING CIGAR—AT 10¢

Product of The American Tobacco Company—"Tobacco is our middle name"

IN BOXES OF 50 AND HANDY 5-PACKS.

FRANCHISE

Easy Way To Start Your Own Business

By Harry Kursh

A FEW years ago Glenn G. Miller, of Eugene, Ore., was a young paper mill employee with a wife and two children, plagued by illness and stiff medical bills. The future appeared pretty dismal. But there was one faint ray of hope.

If he could scrape together a little more than $1,000 he could get a fresh start operating an exclusive-in-his-locale franchise agency for cleaning rugs and home furnishings. Miller was able to raise the money but he had some doubts. He had had no previous business experience and knew nothing about franchise techniques or what he would need in money, training, equipment.

But the company—one of several top-notchers in the field—said in effect: "Never mind. We'll supply every-

RENTAL FRANCHISES are a fast-growing field. The parent company supplies the rental gear—boats, beds, power equipment—you name it.

GARDEN SPRAYING and other house and garden service franchises are going great guns in ever-growing American suburbia. The franchisee leases patented equipment.

thing you need and we'll train you thoroughly. You'll learn how to run the business, how to use the equipment and increase sales. All you'll need is the minimum investment, a real desire to be your own boss and the willingness to work hard."

Miller decided to take the plunge. To help him over the hurdles, he took on some part-time janitorial duties in exchange for a low-rent apartment. He kept his supply of new franchise equipment in a nearby garage and operated out of a basement office with his wife's help. It was a slow start. The first month he took in only about $100.

"But we've found that it pays to be patient," said Miller. "Today, we are averaging around $400 a week! We have a beautiful new ranch home in the country and all the comforts we never dreamed would be ours."

How does a franchising outfit work? Essentially it is a chain of stores in which each store is owned by an independent operator. The operator of the outlet has a contract with the parent company. This contract is called a franchise.

For a cash investment or percentage of the profits—sometimes both—a company will invite you to join a local or national business chain operating under its name. They will advertise and promote to make their name, goods and services well known. They'll teach you how to run the business profitably. They'll protect you against competition from others in the chain and even help you borrow the cash investment, to be paid off from future profits.

It has been estimated that at least 100,000 Americans now own successful franchise businesses, and new ones are being created at the rate of some 10,000 a year. The franchise boom was touched off by a growing roster of companies who decided to expand outlets for their products by making it easier for ambitious Americans to start their own business.

The Duraclean Co. of Deerfield, Ill., one of the oldest in the lucrative franchise business, has an exclusive absorption process for cleaning upholstery and carpeting. It offers franchisees some 25 services to start them off and keep them going. One Duraclean franchise-holder is said to average $50,000 a year.

There are many other kinds of franchises. Consider, for instance, Peter G. Krosunger, a Long Island milkman. Pete had heard about franchises being offered by General Spray Service, Inc. of Katonah, N. Y., a lawn and garden spraying firm. The business is based on the use of a special truck and a new device known as the Agi-Sprayer. For a total investment of $7,850, General Spray would give Pete one of its special trucks, train him in its use and teach him how to get customers. If Pete could raise $2,850, the company would help him finance the balance over a period of three years. On top of that the company guaranteed that Pete would make at lease $300 a week for a minimum of 30 weeks, or they'd buy back the equipment!

Pete didn't have the down payment, so in his spare time he went out and sold scores of homeowners service contracts —for cash down payments. Then Pete used the cash to get his General Spray franchise. [*Continued on page* 153]

FOOD-CATERING franchisees supply take-out packaged dishes or complete meals, may offer home delivery. Job-holding, PTA-running gals love them.

POCKET-SIZE alarm would let you know when your phone is ringing if you are outside house. T. Thesenvitz, Wood River, Neb.

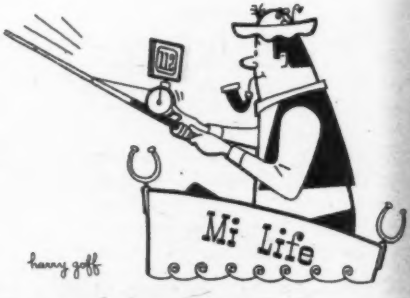
TRIGGER LOCK in butt of rifle or shotgun would allow only owner to use gun, prevent accidents. T. Jones, Chula Vista, Calif.

INVENTIONS WANTED!

Is there a gadget you think should be invented? If so, send its description on a postcard to Inventions Wanted Editor, MECHANIX ILLUSTRATED, 67 West 44th St., New York 36, N. Y. Each one printed will be awarded $5. Entries not selected cannot be acknowledged or returned.

WAX-COATED paper tubes, sold in cartons, would be big aid in starting bonfires or barbecues. D. Fitzsimons, Mt. Crawford, Va.

FOLDING STOOL attached to side of supermarket carts would let you rest at checkout time. J. Raffaelli, South Range, Mich.

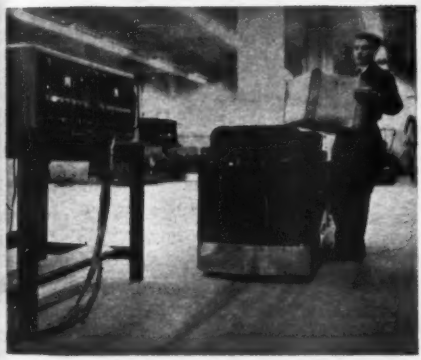


DIAL GAUGE built into your rod and reel would tell you depth at which the hook is floating. Robert Valentine, Lawton, Okla.

DRIVERLESS truck is fitted with safety brake which stops it before an obstruction.

NO-DRIVER TRUCKS

ROBOTUG is an English-made electronic truck which responds to the touch of a button and zips from one site to another carrying up to one-ton loads. The truck runs on a wire laid on the surface of the factory floor in a temporary installation; in permanent installations, the wire is placed an inch below the floor. Robotug can also be operated manually. It costs about $4,200. •



CONTROL PANEL. One man can run any number of trucks throughout large plant.

SURFACE wire is temporary installation. Any number of turns, junctions can be made.

"POOPSI-DOLL" WEIGHS 590 LBS.

POOPSI-DOLL nestles under the belly of a DC6B. Owner pilots one of these big birds.

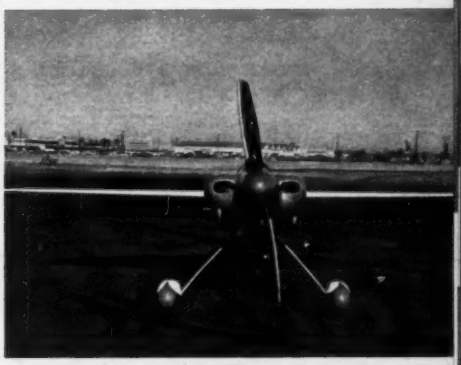
THE first time you see it in the air you have an almost overwhelming urge to swat it—it's tiny and has the angry hum of a bilious mosquito. But when it settles to earth you realize the Poopsi-Doll is one of the most stylish little home-built planes ever to fly.

Its creator and owner is Howard Terrill, a Western Airlines pilot of Torrance, Calif. A member of the Experimental Aircraft Association, Terrill put the Poopsi-Doll together in his garage. The wee tot measures only 16 ft., ten inches from wingtip to wingtip and weighs 590 lbs. without fuel or pilot, 867 lbs. with.

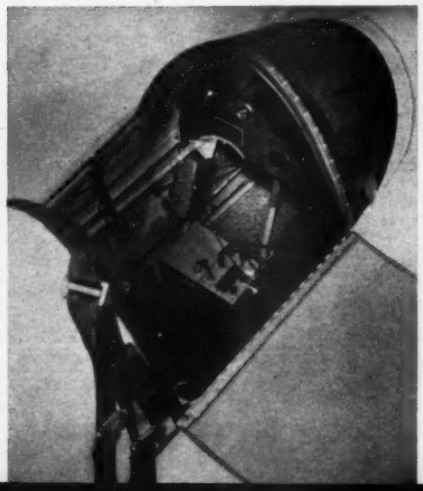
The engine is a 125-hp Lycoming with a fixed-pitch prop. The fuel tank holds 10½ gallons and the oil system takes two quarts. Terrill estimates 18 months of labor and $2,300 worth of materials went into Poopsi-Doll—but when he's cruising along at 195 mph it all seems worthwhile! •

BUILDER TERRILL sits astride his creation. The neat landing gear is solid spring steel.

TWO-WAY RADIO is Skycrafter VHF Multiphone which can be used as battery portable or plugged in. Cockpit, below, has simplified design, hinged plastic canopy.

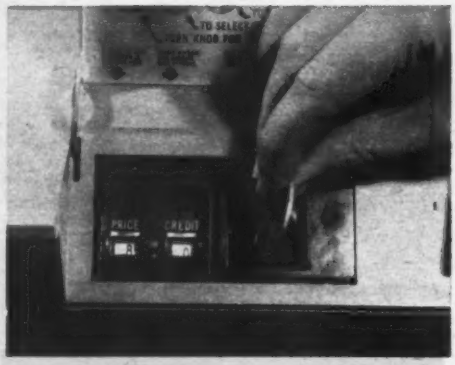


COWLING is fiber glass, fuselage is made of welded seamless tubing, metal covered.

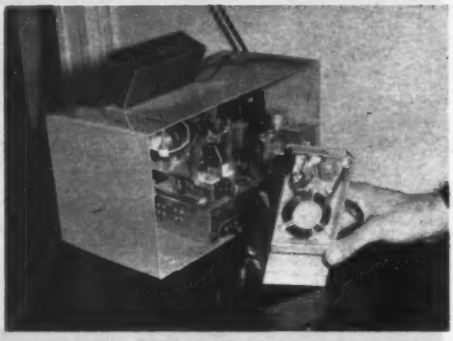


DESIGN is all Terrill's own—he used no plans. Ship climbs 2,800 ft. per minute.

HOW PAY-TV WORKS



PAY-TVer selects channel she wants to watch. The coin box indicates the price.



COIN BOX in the rear of the Telemeter is removed by company once each month.

PAY-TV may be in operation in some U.S. cities before the year is out. One system being considered is that of International Telemeter. If you become a subscriber, there will be about a $5 coin box installation fee. You'll view first-run movies for about $1; an opera for around $1.25; championship fights for approximately $2. Average pay-TV for the week is estimated at little more than $2.

In the Telemeter system, a cable is laid in the pay area and a line run to the subscriber's home. The coin box goes on the top of the set. You'll be able to tune in on three pay-TV channels. When you decide what you want to watch, you switch to the channel and the entertainment cost is shown on the coin box indicator. You insert the correct change, make yourself comfortable, and enjoy commercial-free TV. •

DESIRED program is watched after the coins are inserted and set adjusted.

IT'S NEW

TRIKART, a three-wheel kart made by Highway Welding Company, Elizabeth, N. J., is said to star at cornering, traction.

RUSSIAN-BUILT thermoelectric generator turns oil lamp heat into electricity for radios. Martin Co. officials examine it.

PIPE DETECTOR is shown to Toronto city engineer by inventor Edgar Sharpe, left. Device magnetizes pipes, then locates them.

CONTINUED . . .

SKI TALKIE is the name of the microphone-speaker unit on the tow bar; it permits two-way talk between the skier and the towing boat.

FIREFIGHTER plane, a refitted Martin Mars flying boat, spews water in a demonstration in Canada. The plane can suck in 32 tons of water in 35 seconds, take off.

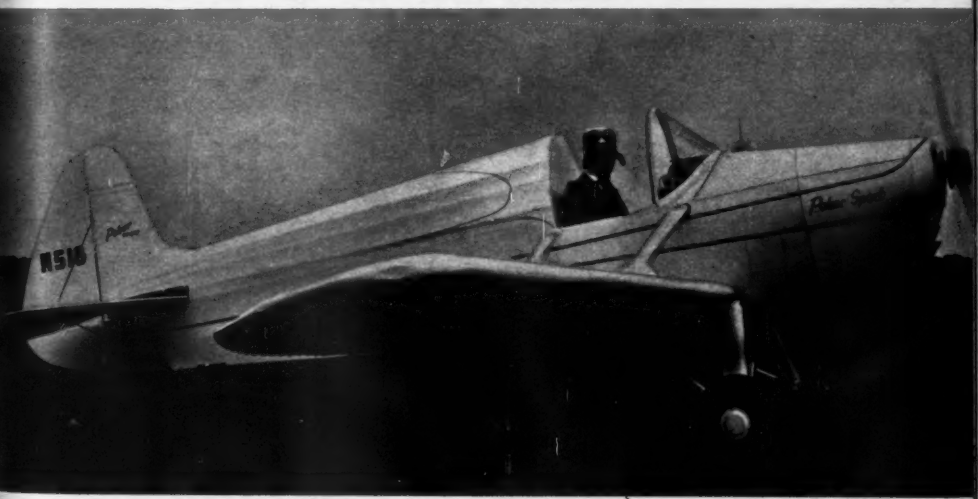
305-LB. TRACTOR gets a boost in London. Maker claims the tiny machine can be used for mowing, plowing and nearly any other agricultural job done by tractors.

TOY EXTRUDER makes a wide variety of things, from concrete blocks to noodles, of Play-Doh. Comes with 12 different dies.

BIG EARS don't always signify a donkey. This is a French hearing aid for sailors listening for fog signals from other ships.

CARPARK is the name of this British system for parking more cars in a parking lot. Platforms roll aside easily to form exits.

JET WAGON was used by rocket expert E. R. Mertz to explain propulsion to Grangeville, Calif., pupils. Those are big CO^2 bottles.

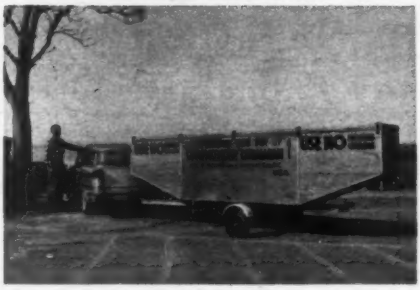


POBER SPORT, homebuilt by Paul Poberezny of MI Baby Ace fame, does a neat 130 mph.

FOLD-UP

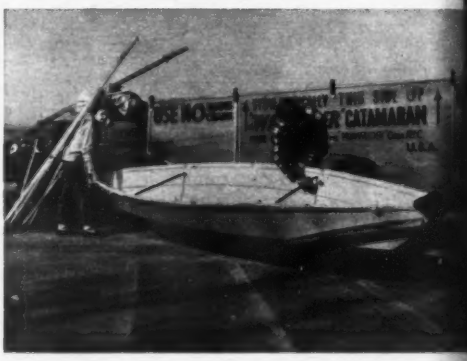
Catamaran

LATEST arrival in American waters is the catamaran Waverider, a 16-ft. sloop-rigged racing craft that folds up in a box 16x3x2′. Built in Britain, the Waverider has two hulls that use a neoprene seal and hinge. Decks, cockpit and mast come in easily handled sections and the entire boat, folded up, can be hauled on a two-wheel trailer. The price is $1,500 without sails, $1,750 with sails from Waverider Corp., 250 West 57th St., New York, N. Y. •



WOODEN case of Waverider fits easily on a trailer, can be handled by two people.

HULLS are made of quarter-inch laminated plywood, hinged with watertight neoprene.



SNAP-OPEN hull is braced. When fully assembled, Waverider has eight-foot beam.

COCKPIT comes in two sections. Heaviest section of the craft weighs only 90 lbs.

BOTH HULLS offer ample storage space accessible from cockpit through two hatches.

RUDDERS and tillers are twin retractable with arms tilted inward. Boat sails four.

TWO-SECTION mast is 22 ft. tall, holds a sail area (main and jib) of 160 sq. ft.

300-LB. CRAFT can be easily launched from the shore. It has a draft of only 12 inches.

SPECIAL SECTION . . .

CAMPING IN YOUR CAR

By J. Robert Connor

CAMPING in your car may be the answer to your vacation problems this summer. It will give you and your family an opportunity to get away from it all for a week or two and enjoy a first-hand view of the country. You can wander anywhere in the U. S. and most of Canada. The best part is that your clan can have a whale of a time and a delightfully different vacation at a most reasonable price. This is borne out by the fact that visitors to our national parks and other areas administered by the National Park Service totaled 62,812,000 in 1959.

Many families who take a crack at camping return to it year after year. The only change in their plans is usually in itinerary. A two or four-door sedan will carry everything that is needed for comfortable campsite living—with room to spare.

Inveterate campers will tell you to buy only the best equipment. This is a good rule to follow. However, the first time out you don't have to spend a large amount of money. You can begin with basic essentials and add to your gear each year. For example, we asked Morsan Tents, Inc., of 10-21 50th Ave., Long Island City 1, N. Y. to suggest a budget camping kit for a family of four.

Their kit includes a tent that sleeps four, air mattresses, stove, cooking kit, lantern, folding table and stools, refrigerator, rope, first-aid kit and other essentials that would enable a family to camp out in comfort for two weeks or more. The total cost for the outfit was less than $135. This

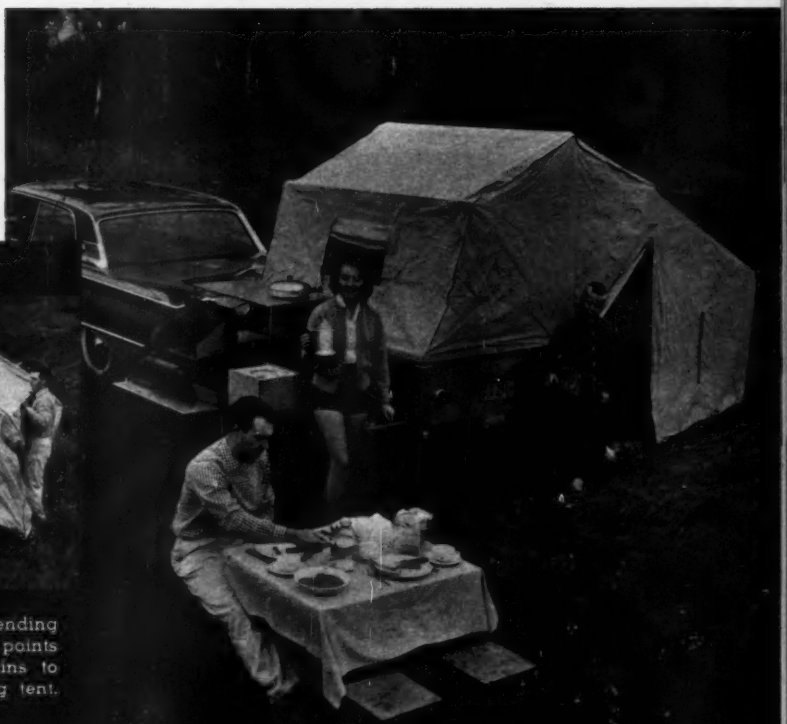
HEILITE Camping Trailer is towed behind car. It rides easily, safely on one wheel. Low and easy to maneuver, rear vision is unobstructed.

CAMPSITE setup is simple. Legs are lowered, cover unbuttoned. Frame is attached to tent; entire unit is snapped into shape.

FOLDING kitchen has insulated ice chest, five-gallon water tank and storage space for groceries and utensils. It also has compartment for two-burner stove, cutlery tray and dishpan. Heilite Camp Kitchen folds down to compact unit. Price is $120. The optional mounting kit is $4.50.

Heilite Trailers, Inc., Lodi, Calif.

CAMPER (shown on cover) is ready in 60 seconds! It sleeps two inside on 48x72-inch innerspring mattress ($37.50 extra), also has storage space, room for cots. Price: $545. Two-wheel model is additional $30.



UP it goes. Extending frame at proper points is all that remains to complete erecting tent.

KARPAK SLEEPER beds two campers off ground on ¾-size double bed mattress. Unit folds flat when traveling. Karpak Sleeper is $81.95 and five-foot, four-rung ladder, $13.50.

Karpak Co., Roanoke Blvd., Minneapolis 2, Minn.

STURDY canvas bucket is ideal for toting water to campsite. It folds for storage, quickly snaps into shape. Price is $4.95.

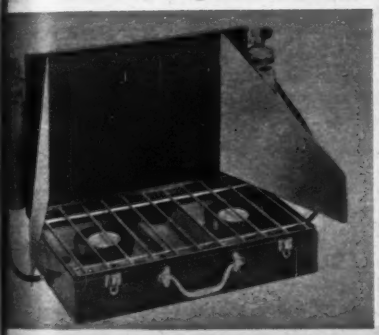
Ward Mfg. Inc., 2530 Spring Grove.
Cincinnati 14, Ohio

14-PIECE aluminum nested cook kit, everything necessary for four people. The kit is $12.95 and canvas bag $2.

Abercrombie & Fitch,
New York 17, N. Y.

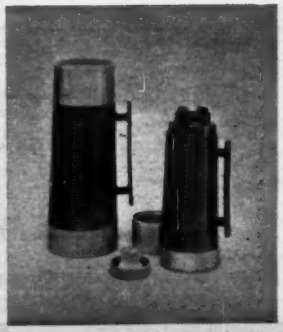
CAR-TOP SLEEPER bunks two on air mattresses, folds down to ten and one-half inches for travel. There is also space for camping gear. Inside dimensions are 44x78 inches. Unit is made of laminated plywood painted white with green canvas. It's $98.50.

Hershbau Mfg. Co.,
111 South 12th St.,
Ft. Dodge, Iowa



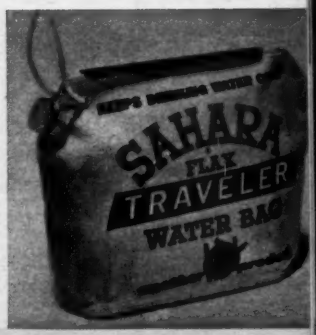
BERNZ-O-MATIC two-burner stove is new. Propane gas cylinders give about eight cooking hours. $24.95.

Hudson's, 105 Third Ave.,
New York, N. Y.



DURA-CLAD vacuum bottles come with handles. Pint size: $2.19; quart: $3.50.

Aladdin Industries, 703 Murfreesboro Rd.,
Nashville, Tenn.



CANVAS bag keeps drinking water cool, hangs in car, etc. $1.95.

Ward Mfg. Inc., 2530 Spring
Grove, Cincinnati 14, Ohio

equipment is made of sturdy materials that with care will last for years.

Once you have your camping gear it will cost you no more to live on the road than living at home. This is one of the prime advantages of camping. It's a good idea to treat your car to a good tune-up and to replace any worn tires before you leave. Stow a fire extinguisher, flare and a first-aid kit in an easy-to-reach place. Hammacher Schlemmer of New York City sells a compact Auto Sav-A-Life Kit which includes all three. It's $7.50.

(Text continued on page 76)

HANDY TABLE unfolds to seat four, stands firm even if surface is not level. When folded, unit is only four inches wide. It has tempered masonite seats and top, heavy gauge steel frame, nickel trim. $32.50.

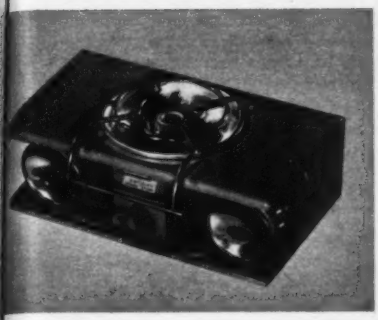
Leisure Industries,
98-10 Ascan Ave.,
Forest Hills 75, N. Y.

ESCORT roomy portable refrigerator adapts for plug-in use in car lighter or LP gas. About $130.

Selectra Industries, Ltd.,
22 Dorchester Ave., Toronto 18, Calif.

PICNIC HAMPER. Chinese rattan, fitted, it boasts service for six. $33.

Hammacher Schlemmer,
145 East 57th St., New York 22, N. Y.



COLEMAN LP gas stove comes with two, two-hour supply throw-away fuel cans. It's $10.95.

Coleman Co., Inc.,
Wichita 1, Kan.

INSTA-LITE gives 150 watts of steady, safe, odorless light. $7.95.

Metalcraft Mfg. Corp.,
Bent and Potomac Sts.,
St. Louis 16, Mo.

OZARK Galley Kit comes with two pegs (not shown) to stand the kit upright in ground. $17.95.

Porta Co. Inc.,
32 Neponset St.,
Canton, Mass.

Safety Hints for Campers

DON'T let an accident cut short your long-awaited camping trip this summer. The outdoors holds no more dangers than you encounter every day at home or on the job—but the hazards are different. If you know what to expect you can avoid mishaps that could turn your holiday into tragedy. In state and national parks, the woods, mountains and seashore, the same basic rules of safety still apply—use ordinary common sense. Remember that you'll be in unfamiliar environment and you'll be using tools and equipment that may not be familiar to you. Remember also that there are two kinds of outdoor hazards—natural, over which you may have some control, and man-made which you can usually prevent. Here are some of the hazards to watch out for:

Tripping over tent guy ropes can be minimized by fastening to each extended line strips of white rag. This will enable you to spot a guy line and avoid it.

Clotheslines should be strung between trees at a level high enough so that no one will run afoul of them.

Placing a lighted gasoline stove or lantern inside a tent is asking for trouble, either in the form of fire or suffocation.

Double-bitted axes are loggers' tools but if you use one, don't park it by smacking it into a stump where the exposed edge might possibly injure someone.

It may seem rugged to open a can with a hatchet but fingers are liable to be mutilated instead. Use a can opener.

When chopping firewood on the ground, brace the piece of wood you're cutting with your feet spread wide apart so a miss won't slice deep into a shinbone.

Put your campfire in a hole or surround it with rocks so wind can't blow sparks onto your tent or nearby brush.

Camp away from trees, especially those with dead limbs; woodsmen call such limbs "widow-makers"—and with good reason.

Carry an adequate first-aid kit and know how to use it. Include a snakebit outfit and side-cutting pliers for removal of fish hooks from the flesh.

Stay on established foot trails. Venturing off alone is unsafe but if you must, let a ranger or someone know where you're going and when you expect to return.

Poison oak is a plant that is not easily identifiable. It can make your camping trip a miserable one. Your best bet is to steer clear of any plant with three close leaves.

Don't walk blindly into a clump of bushes; they might be treetops at a cliff edge.

If you're fishing with waders, don't step where you can't see the bottom of the water. Avoid clambering on wet rocks. They can be extremely slippery.

When near a stream or river, camp on a knoll so that a sudden storm won't deluge your tent during the night and possibly carry you and your camping equipment away in a flash flood.

Always block your car and trailer wheels when parking on a hill.—*Bert Goldrath*

TOT TRAVELER car bed converts to seat, has extra-thick mattress pad, bumpers, reinforced plastic, chrome-plated steel frame. $15.29.

Dennis Mitchell Industries,
4434 Paul St., Philadelphia 24, Pa.

[*Continued from page* 73]

Additional gear can be loaded onto a luggage carrier which is secured to your car roof. Karpak Co. of Minneapolis, Minn. has a complete line from $31.95 to $59.95.

One veteran camper we know emphasized that novices should invest in good and comfortable sleeping gear. "Nothing," he says, "can ruin enthusiasm for the outdoors faster than a succession of sleepless nights."

LIGHTER-FLASHLIGHT operates on regular batteries. Lighter fuel is the igniter. $2.95.

John Surrey Ltd.,
1152 Sixth Ave., New York 36, N. Y.

You can sleep comfortably on an air mattress, cot or in a sleeping bag. Prices for air mattresses range from $2.99 to over $26. The Hampshire Mfg. Co. of Nashua, N. H., boasts a unique air mattress which you inflate in 30 seconds by pumping on it with your foot. Ward Mfg. Co. of Cincinnati makes a neat double air mattress, 48x80 inches, which can be unsnapped to form two single mattresses. It's made of rubberized fabric and costs $29.95. The same company also makes a double sleeping bag which retails for $48.50. Fold-up cots run about $5 and up. The Ames Harris Neville Co. of San Francisco offers a complete line, including all varieties of camping equipment as does Laacke's of Milwaukee, Wis.

If you like to sleep off the ground you might want a unit like the Sky-Vue sleeper and carrier which rides on the top of your car. The unit unfolds in minutes and sleeps two comfortably on an

[*Continued on page* 160]

TIPS FOR FIRST-TIME CAMPERS

CAMPING has become one of the most popular outdoor sports in the U. S. State and federal campsites coast-to-coast give their "No Vacancy" signs real workouts during the summer. Everyone with children and dogs seems to be on the road for a week or two of camping, sometimes more than 1,000 miles from home.

A camping vacation with your family can be a real joy—or a dismal failure. The difference nearly always lies in what you do *before* you leave home. Research discloses that very few first-time campers give enough thought to essential preparation. This can cause unnecessary camping troubles.

The first step is to make an itemized list of everything you will take, including clothes. Send this list to the conservation department of the state where you plan to camp. Ask them to go over it and add anything you may have overlooked. What you take depends largely on the climate and character of the country where you will camp and you may not be familiar with these conditions. Allow a month for a reply. Write to the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. for U. S. Geological Survey maps of the country surrounding the campsite and study them carefully. Then ask an experienced camper or a professional guide what kind [*Continued on page* 151]

MONEY MAKING IDEA

HE RENTS CAMPING EQUIPMENT

TYPICAL rental gear includes a tent, cooler chest, folding stools, stove, lantern and sleeping bags.

By Joseph H. Wherry

CAMPERS HAVEN in Duarte, Calif., is a unique business that allows vacationers to rent everything from a camp stool to an expensive tent for a week or two in the wilds at a fraction of what buying same gear would cost.

A camper can rent without a deposit, provided he has proper identification, such diverse items as a deep sea fishing outfit ($1.50 a day), or a car-top carrier, sleeping bags, stools, a tent that sleeps up to six persons, stove, lantern, cooler chest and toboggan—all for $40 a week. A 25 per cent discount is given for the second week so that this equipment for a two-week junket would be $70. Campers who have no identification pay full charges in advance. All equipment is in prime condition.

The man behind this unusual enterprise is Nels Taylor who originally wanted to open a sporting goods store seven years ago but felt competition in Southern California was too keen.

Taylor decided to begin with equipment that he could rent at reasonable rates to people who would like to go camping, hunting or fishing but who didn't have the cash to purchase all the necessary equipment. It required $500 worth of tents, fishing gear, two rifles, some air mattresses and sleeping bags to start Campers Haven.

The shop was opened at its present site and a simple Rental Only sign hung outside. The idea was an immediate success. Taylor has had to expand into the store next door where he now keeps his $40,000 worth of rental gear. He also conducts a thriving business in new equipment sales.

Taylor absorbs the minor maintenance repairs to his stock and assesses a reasonable charge for grossly damaged items. Most people, he claims, take great pride in returning equipment in good condition. He's suffered only about a $200 total loss from unreliable customers in seven years.

Campers Haven, on the fringe of a great camping area and in the shadow of lofty San Bernardino Mountains, is also near good deep-sea fishing and seasonal hunting areas. Satisfied outdoorsmen keep Campers Haven busy. They claim "The price is right." •

AMERICA'S GREATEST COACH TELLS YOU...

HOW TO IMPROVE YOUR SWIMMING

By ROBERT J. H. KIPHUTH
as told to James H. Winchester

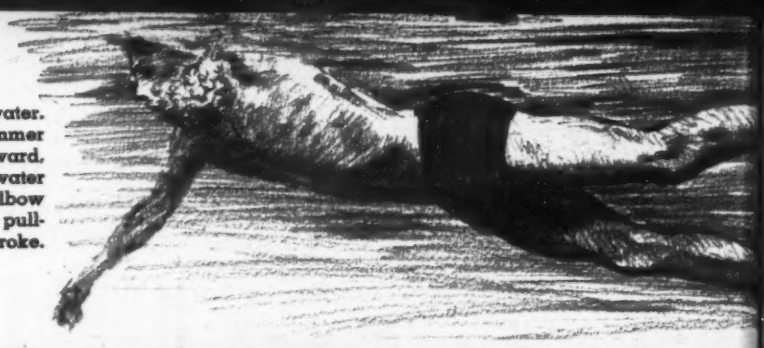
Illustrated by J. George Janes

WHEN Captain Matthew Webb of England swam the English Channel in 21 hours and 45 minutes back in 1875, he used the breast-stroke. In 1926, when Gertrude Ederle became the first woman to swim the Channel, making it in 14 hours and 31 minutes, she used the crawl.

Nowadays in swimming for fun, almost everybody uses the crawl. It is the most efficient, easiest to learn and fastest of all types of swimming. The

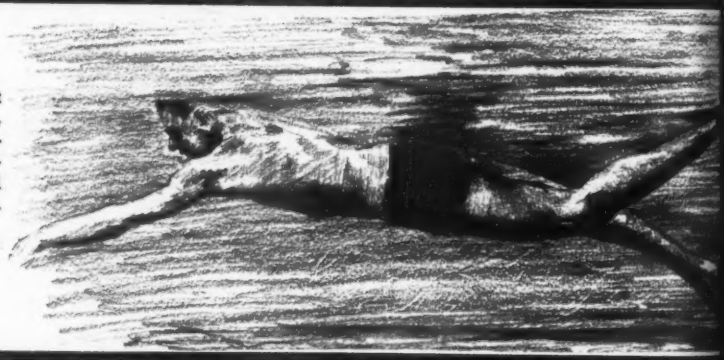
Few can speak with more authority on swimming than Bob Kiphuth. A native of Tonawanda, N. Y., he started at Yale as an instructor in physical education in 1914, became head swimming coach there in 1918. He was head coach of the American Women's Olympic Swimming Team in 1928 and 1932, head coach of the American Men's Swimming Team in 1932, 1936, 1940 and 1948.

In 1959, at the age of 68, he retired with Emeritus status, as Professor of Physical Education, Director of the Payne Whitney Gymnasium and Head Coach of Swimming. The University hired him to continue as head of Yale's Physical Education Department with the title of Lecturer.



EXHALE underwater. At this point swimmer has left arm forward, about to enter water hand first, with elbow high. Right arm is pulling through the stroke.

HAND enters water with the palm turned outward; then it turns down as stroke is continued with arm slightly bent.



RECOVERY of right arm, now out of water, should be almost complete. One arm is always stretched ahead as the other arm pulls.

modern crawl, an Australian development, was introduced early in the century.

Learning how to swim is an important part of every child's education, and I'm assuming everybody who is out of his teens knows how to keep afloat. To get the most healthful enjoyment and relaxation out of water time, though—whether it be in pool, lake, stream or ocean—you must polish up your crawl to a certain degree of proficiency. Before you even start, here are some basic bits of advice:

First of all, take it easy. If you get to the point where you can swim 500 to 1,000 yards—with a rest-break or two—then you're doing all right. If you get so you swim 500 yards in a half-hour's time, that's good enough, too. But don't

NECK TURN gets face out for a deep gulp of air; no need to lift head. Kiphuth recommends practicing in a basin of water at home to master deep breathing technique.

try to reach these limits overnight. Build up to them gradually. Wherever you're swimming, swim where you can stand up when you get tired. If you feel tired—rest!

In over 40 years of watching and coaching swimmers, I think the most common fault I've observed is improper breathing. If you don't master proper breathing you may be able to flounder along for 20 or 30 yards but after that you're through.

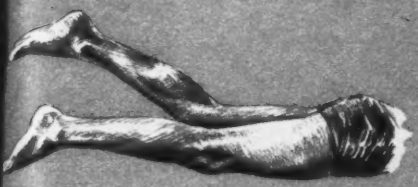
So, in starting out to improve your swimming, proper breathing is the first step. In swimming the crawl, with the face under water most of the time, breathing is forced; the muscles involved have to be developed.

Don't try to do your swimming on one long breath. Instead, when swimming the crawl, inhale a gulp of air through the mouth as the head is turned and out of the water, exhale through the nose and mouth when the face is lowered down in the water.

This takes some doing—and lots of practice. The best place to start is right at home. Stand over a basin of water, head lowered. Turn your head and draw in a gulp of air through the mouth. Turn your head down, dip your face into the water and exhale completely through the nose and mouth, turning your head, as you do, so that it's back in the open by the time you have completely exhaled. This leaves you ready to draw in another breath. Do this 50 to 100 times every night for several weeks, making sure always to exhale every bit of impure air before taking in another breath. Otherwise you'll get a choked-up feeling and tire quickly.

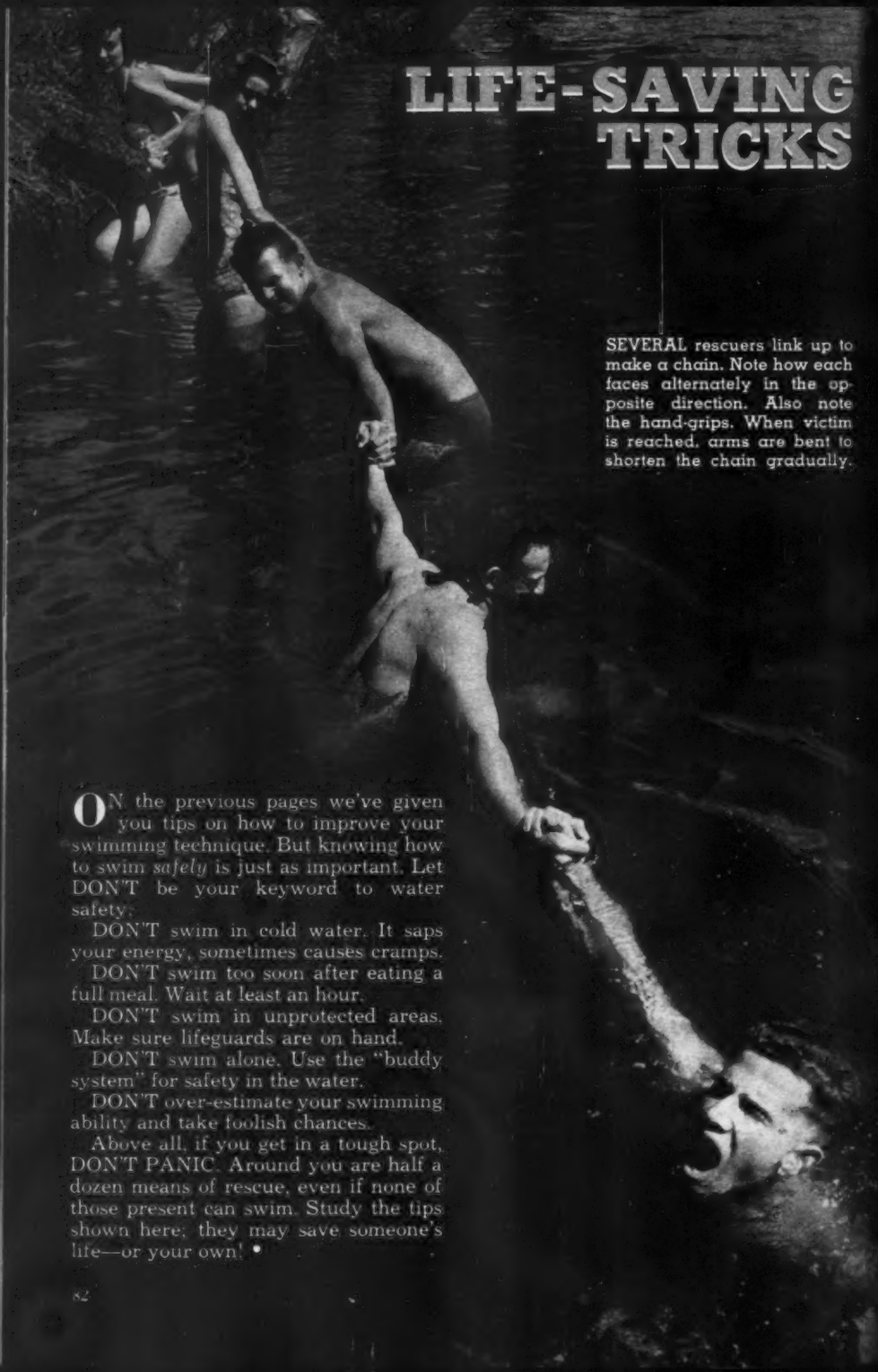
After you've gotten the hang of this breathing in the basin at home, move to a pool. Hold on to the side and let your body float. Don't kick. That comes later. Relax and practice your breathing, until the inhale-with-the-head-turned, exhale-with-the-face-in-the-water maneuver becomes as [*Continued on* page 150]

LEFT LEG kicks down hard as right one rises slightly. This kick is the flutter—the best for the recreational swimmer.



RIGHT LEG kick down as left rises. Correct timing is six kicks (three of each leg) to each complete cycle of your arms.

LIFE-SAVING TRICKS



SEVERAL rescuers link up to make a chain. Note how each faces alternately in the opposite direction. Also note the hand-grips. When victim is reached, arms are bent to shorten the chain gradually.

ON the previous pages we've given you tips on how to improve your swimming technique. But knowing how to swim *safely* is just as important. Let DON'T be your keyword to water safety:

DON'T swim in cold water. It saps your energy, sometimes causes cramps.

DON'T swim too soon after eating a full meal. Wait at least an hour.

DON'T swim in unprotected areas. Make sure lifeguards are on hand.

DON'T swim alone. Use the "buddy system" for safety in the water.

DON'T over-estimate your swimming ability and take foolish chances.

Above all, if you get in a tough spot, DON'T PANIC. Around you are half a dozen means of rescue, even if none of those present can swim. Study the tips shown here; they may save someone's life—or your own! •

LINE can be thrown farther if a rubber sneaker is tied to end. Don't use a rock!

TOWELS knotted together serve as rescue line when a rope isn't readily available.

MAN'S BELT can be used in an emergency when the swimmer is close to the shore.

ANY inflated ball can be used to keep a non-swimmer afloat. Hold with both hands.

EVEN a cookie tin can save you if lid is watertight. Hold sides of tin to balance.

PAIR of pants with knotted cuffs makes a good float. Waist under water traps air.

SMALL, buoyant objects such as a plank, toy boat, etc., can help support swimmer.

McCAHILL TESTS

THE AUSTIN 850

BRITISHER rides on ten-inch wheels, has 80-inch wheelbase and is just 120 inches long.

"You can't find a better car for the money anywhere in the world," says Tom of this roomy $1,295 rig.

By Tom McCahill

AS Tiger Balm Finnegan, the Japanese yo-yo magnate, might have said, "Big deal comes in small package." If he had the new little Austin 850 in mind, he'd be right.

The Austin 850, with overall dimensions comparable to those of a Saint Bernard, is one of the best transportation buys I have tested in many a moon. Selling at the curb in New York City (with all taxes paid) for $1,295 makes it something to think about if money is any concern to you. I'll whip up an uneducated guess and state that it will start the Volkswagen and Renault people thinking a little bit, too. For though this 80-inch wheelbase perambulator appears smallish, it has more usable interior passenger room than either the VW or Renault Dauphine and its performance is just about equal —possibly a hair equaler.

Powered by a great 850-cc (51.79 cubic inches), four-cylinder engine that

AUSTIN 850 is the same as the Morris 850. The only distinction is the different grilles.

LUGGAGE space in trunk should prove adequate for most weekend gear, reports Tom.

STOWAGE space is plentiful in wide, full-length pockets built in both of the doors.

SIDESADDLE-mounted engine is front-wheel-drive job with a 51-cubic-inch capacity.

is mounted sidesaddle (or from left to right, depending on how you got out of bed), the drive is through the front wheels. The wheels are only ten inches in diameter, which means they are almost interchangeable with the casters on Gramp's club chair. Now, we've blasted small wheels on these pages many times for their low wear factor. But in this case we must bear in mind the 1,288-pound total weight of this little bucket, which doesn't make the wheels seem quite so small when you consider the 5,000-pound juggernauts from Detroit that are running on 14-inchers.

Regardless, the big bowl of cherries in this car becomes apparent when you put it on the road and drive it as hard as the little mill will spin. Those baby ten-inch wheels really groove the corners and the 850 whips through bends and snakes down mountain passes like water in a pipe. This is one of the best biting-in-and-holding barouches I've driven in some time and it is every bit as roadable as at least one top sports car I know, though not as quick.

Years ago, when front-wheel-drive became popular on these shores in such cars as the Cord, many a hell-for-leather driver found himself sailing backward when the general idea was forward. These FWD jobs had a nasty habit of

HOLE in rear section of car's shell, in front of the tire, is merely a grease gun opening.

DASH has huge bin. One instrument houses speedometer, fuel gauge and idiot lights.

plucking your ego when abused. The most famous front-wheel-drive cars of all, the fabulous Indianapolis Novi Specials, proved at times as furry to drive as spending a night in a cave-full of cobras.

Through better steering geometry and balance, recent FWD cars such as the Swedish Saab have become almost as docile under all conditions as any rear-drive cars ever made. The Saab has proven fantastically capable on snowy and icy roads during many major rallies. What the Saab has done (and in this case, the Austin 850 also) is to beat the heavy steering problems all front-wheel-drive cars of the past were bothered with. I toured all over Europe and across the Alps twice in a front-wheel-drive Citroen which was a great car but about as easy to steer as twisting a redwood tree. Steering an Austin 850 is as easy as plucking a hair from a shedding dog's tail.

This sidesaddle engine mounting should give the 850 more traction than an octopus in a glue factory. The entire weight of the engine and transmission is actually a hair forward of the front wheels, which means very little power loss plus positive driving wheel contact. Over rough roads (and I mean *really* rough-rutted Bucks County Specials), this little job bobs in and out with less damage to itself and to your posterior than any 4,000 pound-and-up Detroit balloon I can think of. The interior room is ample for four big people and the luggage space in the trunk behind, though not of tractor-trailer proportions, should prove adequate for most weekend luggage.

As in a good boat, there are a number of other places for stowing your personal treasures. For example, the car has a large package bin under the dash and each door has a good size pocket built into it that runs the full width of the door. [*Continued on page* 152]

TEST CAR SPECS

MODEL TESTED: **Austin 850 two-door sedan**

ENGINE: **4** cyls; **51.79** cubic ins; **37** brake hp; **44** ft-lbs max torque; **8.31** to 1 compression ratio. Bore **2.48** ins; stroke **2.69** ins. Fuel required: **Regular.** Standard axle ratio: **8.3:1.** Wheelbase **80** ins; length **120** ins; height **53** ins; width **55** ins; front tread **48** ins; rear tread **46** ins. Weight **1,288** lbs. Gas tank capacity **6.6** gals. Turning circle diameter **29** ft. Tire size **5.20 X 10.**

PRICE (without optionals): **$1,295**

PERFORMANCE: **0-30** mph, **5.9** secs; **0-50** mph, **18.1** secs; **0-60** mph, **26.1** secs. Top speed **76** mph. All times recorded on corrected speedometer.

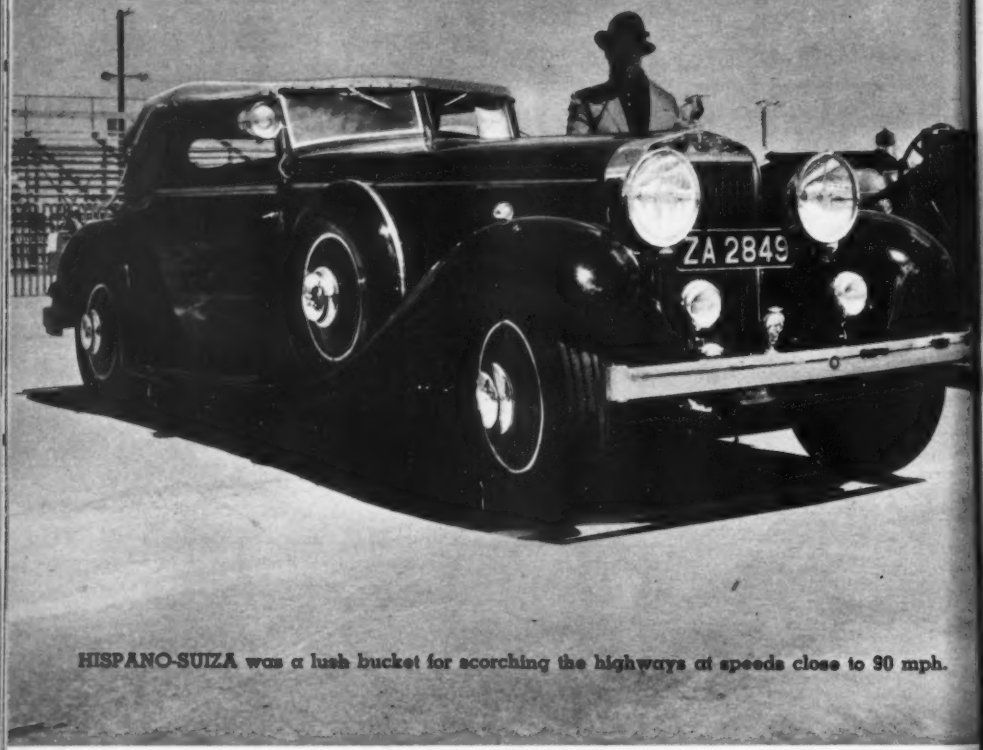
MIMI

"LOOK, listen and keep cool," says our pretty product-tester, offering her many fans a friendly admonition and at the same time showing how to do it. In the frames of those high-quality sunglasses is a sensitive three-transistor radio with a tiny earphone (see inset) that provides excellent tonal quality and lets you listen at beach, ballpark or on the street without annoying anyone. Called the FS-201 Specta-Radio, it is sold by Lafayette Radio, 165-08 Liberty Ave., Jamaica 33, New York. The price is $24.50. The advanced circuitry in the Specta-Radio employs three transistors and one germanium diode powered by a mercury battery. The works and controls of the radio are all in the temples of the glasses. Below: MIMI delicately adjusts the volume.

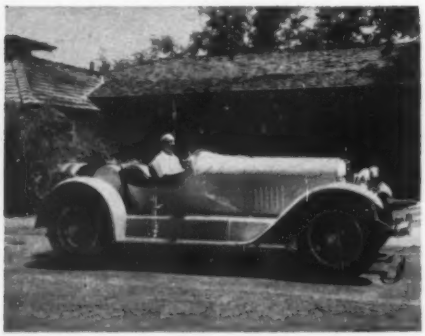
McCAHILL NAMES . . .

"THE GREATEST CARS

Tom looks back and fondly recalls the outstanding motor



HISPANO-SUIZA was a lush bucket for scorching the highways at speeds close to 90 mph.



MERCER of '20s was closest rival of Stutz for swashbuckle crown—a true quality car.

MEXICAN LINCOLN ('52-'54): Safe and fast, superb roadability, handling properties.

I EVER DROVE"

car champions of all times.

By Tom McCahill

RECENTLY MI editor Bill Parker attended a press party at the Tavern-on-the-Green in New York's Central Park. The party was given to introduce a book, The Indomitable Tin Goose by Charles T. Pearson, which concerned the late, defunct Tucker car which I tested on these pages 12 years ago.

Talking to me on the phone next day in Florida (where I was stationed at the time), Bill said, "Tom, was the Tucker a really great car?" I told him it was the greatest car built in America at the time but would be an awful dog today. This got both of us to thinking of the "really great" cars of the present and past and we wound up by deciding to do this article.

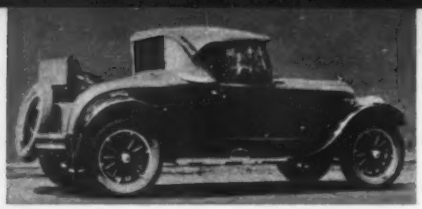
Actually, greatness is a quickly-fleeting quality in the automobile business. Very few cars could truly qualify for the title, even in their own time, and it seems unfair to compare a car of 20 years ago with today's crop. There have

MARMON Model 75 sports touring car of '27 deserves full stamp of greatness, says Tom.

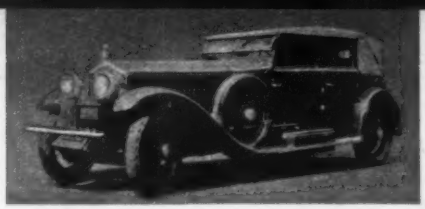
TUCKER of '48 did 110 mph, was loaded with ideas, innovations picked up by industry.

CUNNINGHAM of '50s came within eyeblink of ruling sports car world, did over 150.

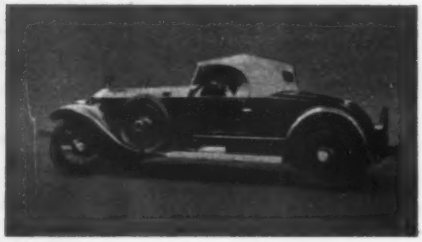
'50 CADILLAC with stick shift did honest 100 mph, cost under $3,000 in New York City.



CHRYSLER 70 emerged in 1924. Tan roadster launched corporation on the road to fame.



MINERVA of '29 made in Brussels, Belgium; $28,000 car boasted 14-karat gold fittings.

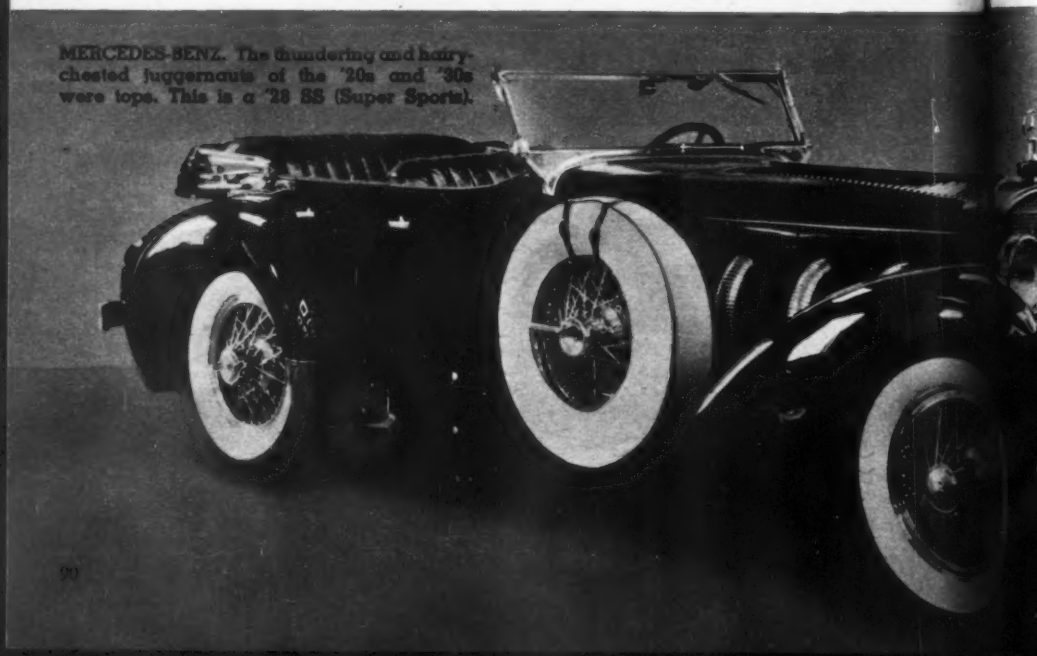


ROLLS-ROYCE Playboy roadster had Brewster body, '23 chassis, was owned by Tom.

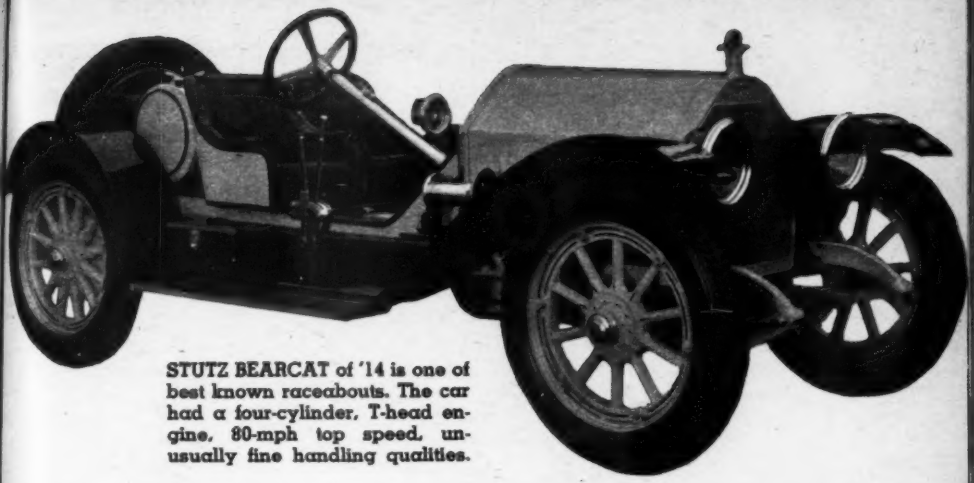
WILLS STE. CLAIR of '24 was a fine auto with advanced design, powerful V8 engine.

been tremendous changes in public tastes and, more important, major improvements in automotive design and engineering, in metallurgy and in highways.

However you look at it, it takes a lot of thises and thatses to earn a car the title of "great." By today's standards a car can be great without having all the features some cars of the past enjoyed and which are sorrowfully missed (by me, anyway). For example, all the "great" cars of 20 or more years ago were specimens of superb craftsman-



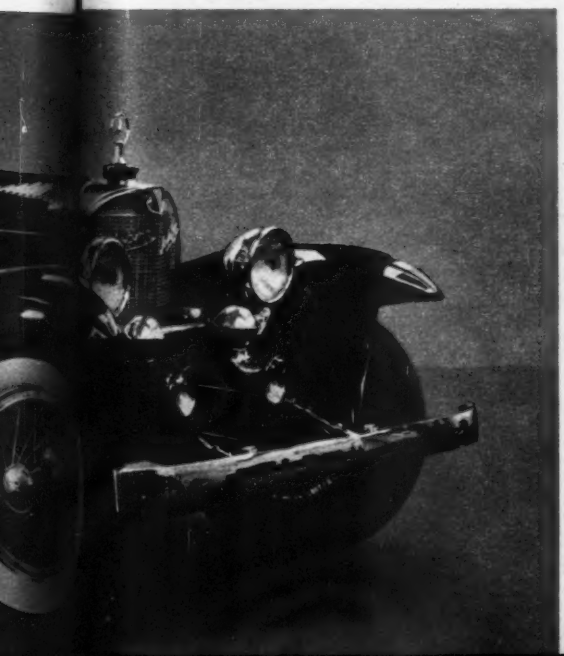
MERCEDES-BENZ. The thundering and hairy-chested juggernauts of the '20s and '30s were tops. This is a '28 SS (Super Sports).



STUTZ BEARCAT of '14 is one of best known raceabouts. The car had a four-cylinder, T-head engine, 80-mph top speed, unusually fine handling qualities.

ship. The coachwork was so far superior to anything being built in the world today that you might as well compare a $5.95 cane chair with the work of Chippendale or Sheraton. At any rate, this piece will concern itself with what I regard as the greatest cars I have driven or owned through the years.

As we go into the 1960s the only car that can qualify as "great" in my book this year is the Chrysler 300F. It has the best suspension of any car made in America and few sports cars can outhandle it on second-grade roads or around hard bends. With air conditioning and all the goodies, it can carry four people and their luggage coast-to-coast in comfort never known by J. P. Morgan or John D. Rockefeller. This gutty, capable job, when tuned right, can get up to speeds of 150 mph and break under seven seconds for 0-60 mph. In traffic it is as docile as a kitten. I call the 300F "great" not because of its outstanding ability as a record-smasher at Daytona Beach but because it combines nearly everything a man with a full complement of red corpuscles could want in a piece of transportation. It has true swashbuckle and that almost-forgotten quality of glamor.



Back in 1952, the Lincoln race team went to Mexico and won the great Carrera Panamericana over all comers. They did this again in '53 and '54. By 1953, the Lincoln engineers with the help of such men as Clay Smith and Bill Stroppe, had developed the Capri model into one of the finest pieces of automotive transportation the world has ever seen. I owned one of the 1953 Mexican Lincolns especially built for me (March '53 MI) and at last report it was pushing 300,000 miles without a serious engine overhaul. It proved to me that in America we could still build top-quality automobiles with fantastic performance if the incentive was large enough. My Lincoln Capri [*Continued on page* 162]

THE

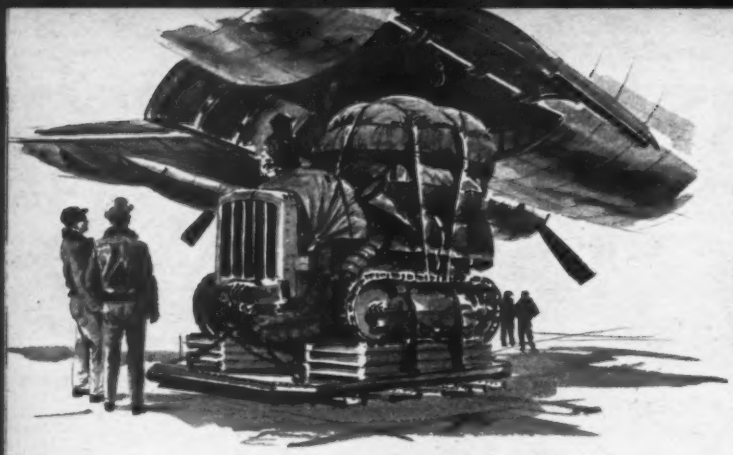
MIGHTY BULLDOZER

ON Thanksgiving Day 1904, in a soupy, swampy field near Stockton, Calif., a group of overshoe-clad farmers waited skeptically for the demonstration of a new type of farm tractor. They were particularly skeptical as they looked down and saw the sticky mud oozing up over the tops of their boots.

Presently, a cumbersome, slow-moving monster spouting great jets of steam heaved into view at the edge of the field and clanked to a stop. A crew of men immediately swarmed over it, removed its iron wheels and replaced them with broad crawler tracks. The machine was labeled the Holt Steam Traction Engine No. 77, after its local inventor and builder, Ben Holt. It was about to make history.

The men quickly hooked the heaving, pulsating giant to four gangs of plows and the driver took off across the field. The plows bit deeply into the quagmire and the crowd confidently expected to see the machine

RACING THEIR ENGINES, the drivers headed the crawlers for the cliff and jumped. Tractors tumbled down, were then driven under their own power at the bottom.



AIRBORNE crawlers have been parachuted into battle areas and to advance Antarctic bases; they have worked in every climate from the South Pole to Death Valley.

plow itself under in the slippery goo. Instead, it moved easily over the mush. The demonstration was an unprecedented success as the "Holt 77" pulled more plows deeper than any other tractor of the time—and its tracks hardly marked the mud.

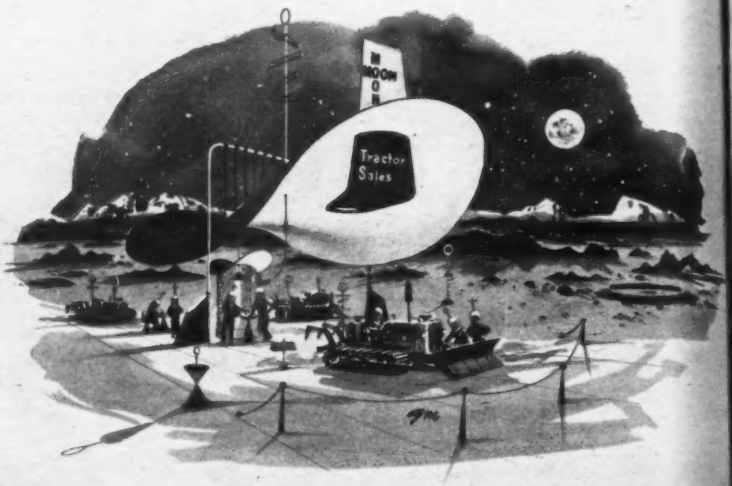
To the farmer, the new machine was a godsend. It soon found wide and welcome use in the spongy crop-fields of California. The broad, long tracks spread the weight of the machine until it exerted far less ground pressure per square inch than a walking man. The steel grousers mounted on the tracks could bite into soft, muddy earth, virtually locking the machine to the ground and permitting all of its power to be used in pulling.

The modern bulldozer is a far cry from Holt's original model. The largest crawler tractor of today weighs in at over 60,000 lbs, and can pull enough board feet of lumber out of the woods in a single trip to build a five-room house. On earthmoving jobs, crawlers can pull 50-ton loads of earth.

Last year over $445 million worth of crawlers were sold by American manufacturers, most of them by Caterpillar Tractor Co., a direct descendant of the firm founded by Ben Holt.

At Caterpillar, earth moving engineers claim there are few jobs of pushing or pulling that a crawler can't do.

Recently, in Canada, the collision of a fast-moving freight train with a standing freight [*Continued on page* 155]



MOONSIDE franchise was given to a Caterpillar dealer who asked for it right after Russians put Sputnik into its orbit.

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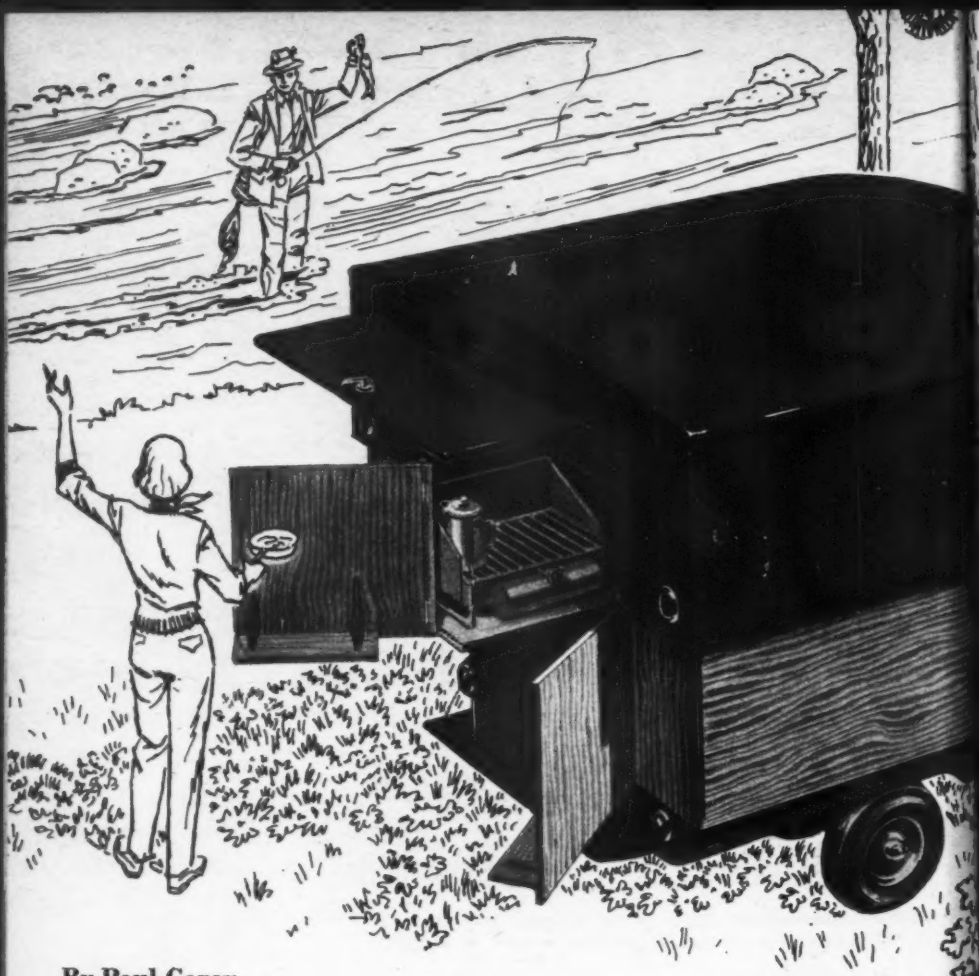
METER attached to probe rod is inserted into earth. At right, indicator on meter shows the degree of moisture.

SPRINKLE MINDER

PLANT-LOVERS can now tell when to water the bloomin' things by using Sprinkle Minder, a gauge resembling a miniature parking meter. You insert the metal probe into the earth at the base of the plant. The moisture content of the soil is then indicated on a dial with ten readings between Wet and Dry. The Sprinkle Minder works on "natural electro-chemical forces," say its maker, Barclay Engineering Corp., 1234 West Fulton St., Chicago 7, Ill. Price is $4.95. •

WIN $50

MI will award $50 each month to the first person who tells us of a new and useful gadget that is patented and in production. Manufacturers are also eligible for this award. Pictures and a description should be sent to Bright Ideas Editor, Mechanix Illustrated, 67 West 44th Street, New York 36, N. Y.



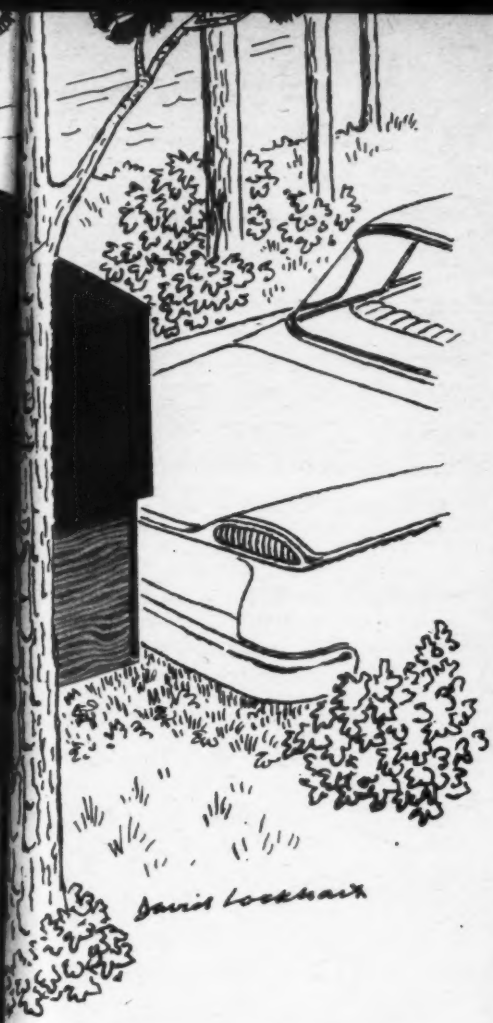
By Paul Corey

VACATION CABIN-

A cozy lightweight that accommodates two, then telescopes

WHEN telescoped down for trailing behind a car, this vacation cabin is so low and compact that you can easily see over the top of it through your rear-view mirror. When you stop for the night, special knee-action elevators allow the top section of the cabin to be raised and locked in position. Once open, there is plenty of room inside for a stove, a table and your camping equipment. The table folds away to provide sleeping space for two. And the whole unit weighs less than 500 pounds!

Upon returning from your vacation, simply unbolt the cabin from the trailer, set it in place on fixed supports in the



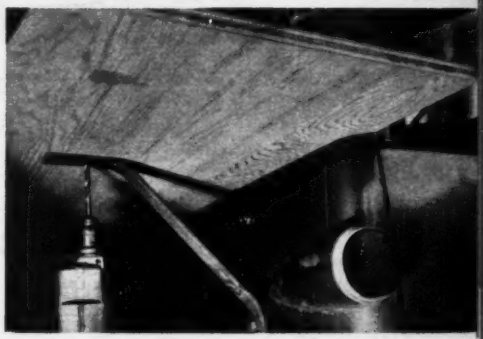
TRAILER

to half-size for trailing.

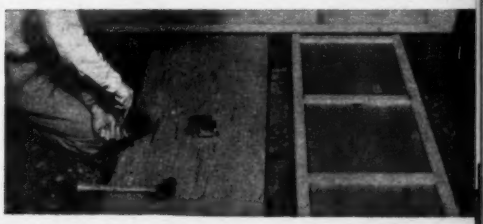
backyard, and the trailer is once again available for hauling jobs. Even then the cabin can serve as emergency sleeping quarters or as a playhouse for the youngsters.

The platform which rests on the trailer and forms the base of the cabin is of ¾-inch exterior-grade plywood.

PLATFORM fits over trailer. Note fender cutouts, blocks through which bolts pass.

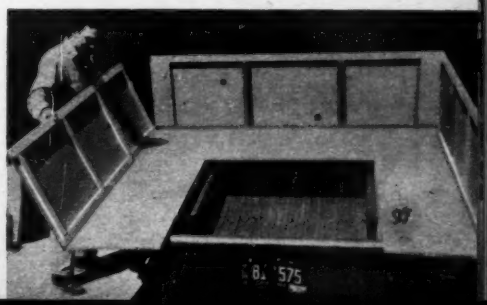


STRAP IRON BRACES bolted to sides of trailer support horizontal sideboard panels.



LOWER cabin sides are of ¼-inch plywood panels nailed to frames of 1x2-inch stock.

FIX FRAMES to platform with wood screws turned through overlapping plywood edges.

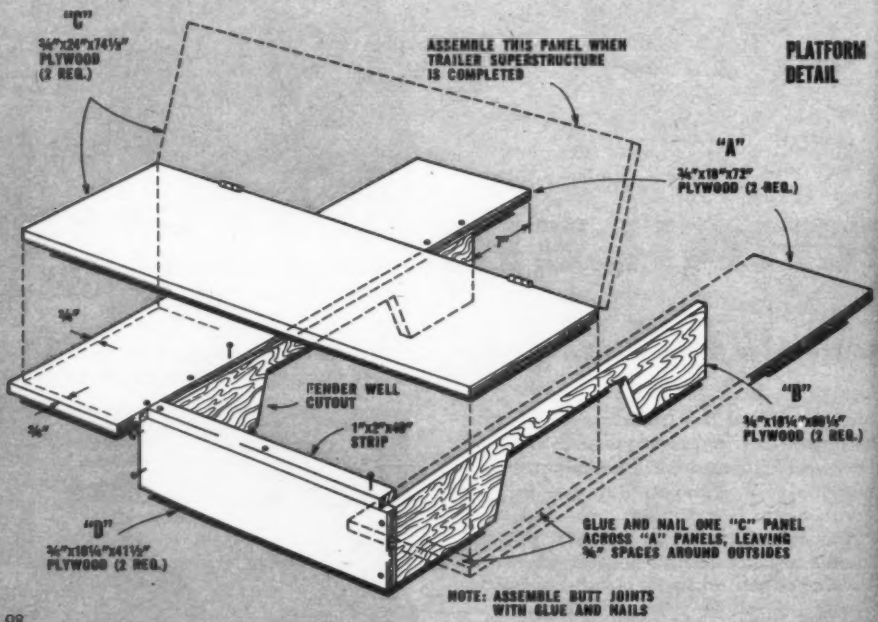


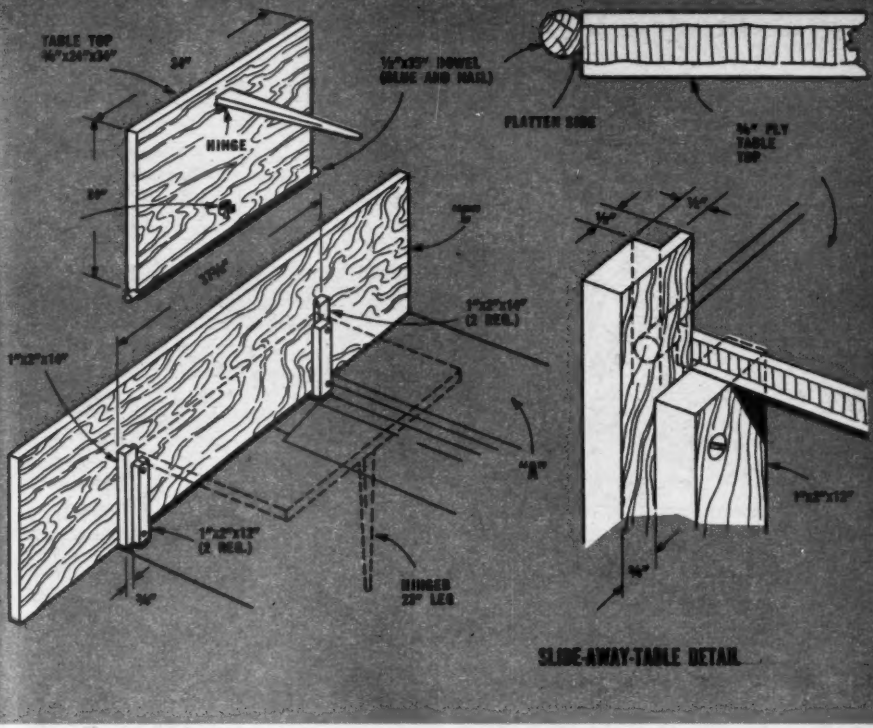
LOWER REAR WALL assemblies are screwed and glued to platform and sides.

CABIN ROOF FRAME is first portion of telescoping top section to be assembled.

The side walls, also of plywood, are ¼-inch stock. Before making any cuts, spend some time studying the drawings and photographs. (Note: Although specific dimensions are given throughout this article, chances are your trailer will not measure exactly the same as this one and you will have to alter the dimensions to fit. Bear this in mind before and during construction.)

To make the platform section, cut the plywood to size, assemble the pieces

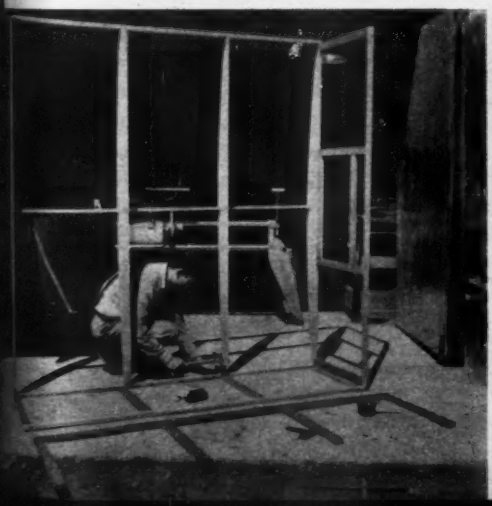




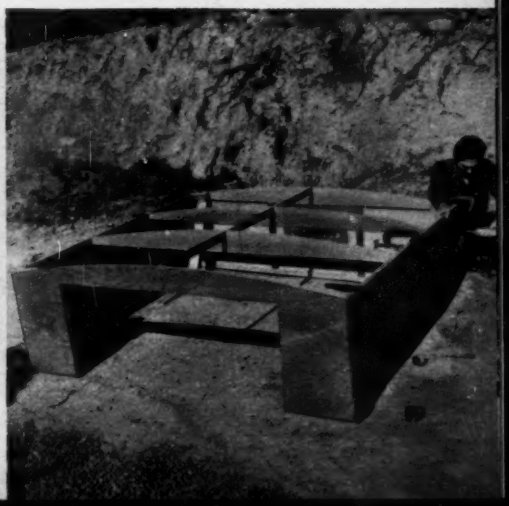
with screws and waterproof glue and set it down over the trailer body. Fasten it in place by bolting it to the trailer through four hardwood blocks wedged upright along the sides of the trailer.

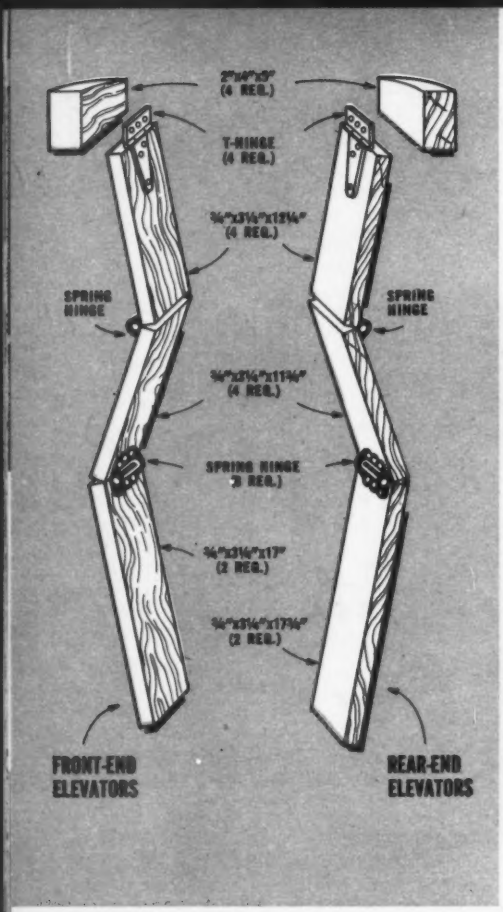
Now construct the side walls for the bottom section of the cabin. After measuring and cutting the ¼-inch plywood

TOP SECTION assembly begins to shape up with the addition of the side wall frames.



COMPLETED FRAME is ready for paneling with ¼-inch plywood; use glue and screws.



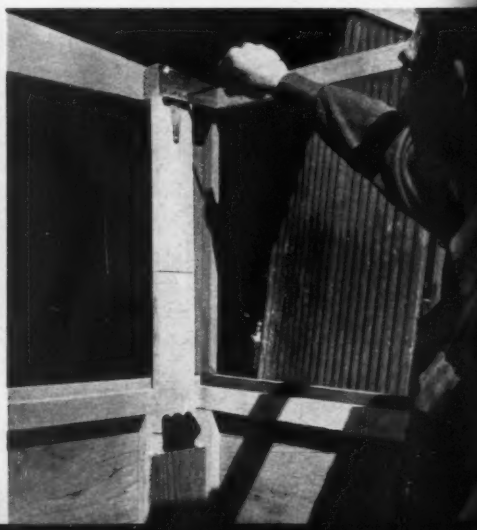


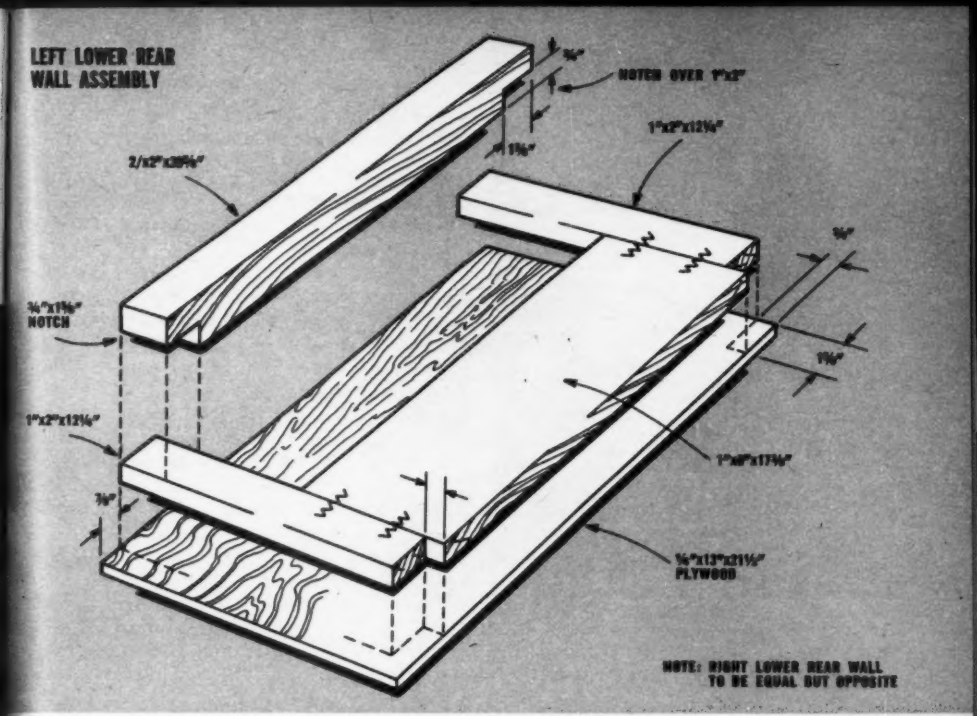
panels, screw and glue them to rectangular frames of 1x2-inch stock. Fasten these five panels to the platform by drilling a series of pilot holes through the plywood lips that extend, where indicated, beyond their frames. Attach the forward panel first, then the sides

BLOCKS at corners of lower section act as stops when top section is dropped down.

SLEEVES for the elevators are installed at each corner of the lower cabin section.

INSTALL elevators at each corner of the trailer; these fold down to lower cabin.



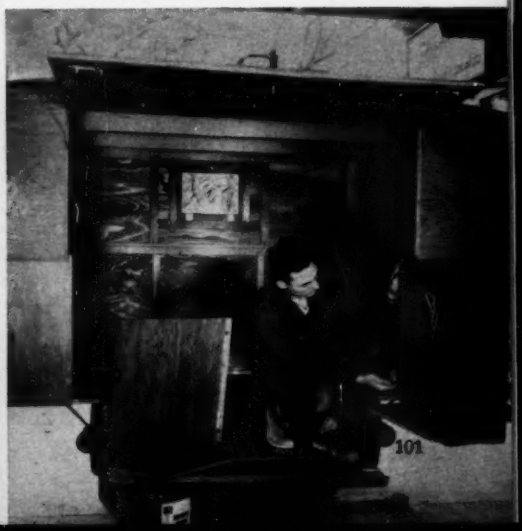


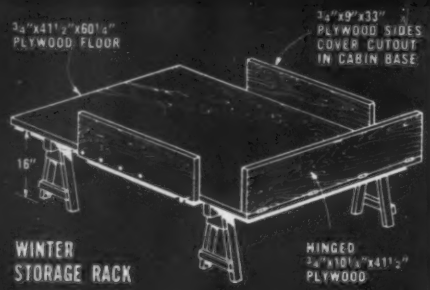
and finally each of the two end panels.

Now proceed to the construction of the upper section of the cabin. This is the section that will be raised and lowered when the cabin is opened for use or closed for travel, so tolerances should be as close as possible without impeding what ought to be a simple telescoping action. During the building of this section make frequent comparisons of its dimensions with those of the lower trailer section so that you can correct

TWO HINGES secure cabin window in its frame: a small spring catch holds it shut.

REAR VIEW of cabin shows arrangement of doors. Note locking bar on overhead door.





DRIP STRIP is installed over hinges of overhead door to prevent rain leaking in.

any miscalculations that could cause the upper half to end as a "top hat" that doesn't fit.

When you've completed the frame, fasten the plywood panels to it. Secure the end panels first, then the side panels so that the ends of the end panels will be lapped.

Four hinged elevators support the top section when it is open and permit it to be telescoped down when not in use. These elevators are supported in wooden sleeves installed at each bottom corner of the cabin.

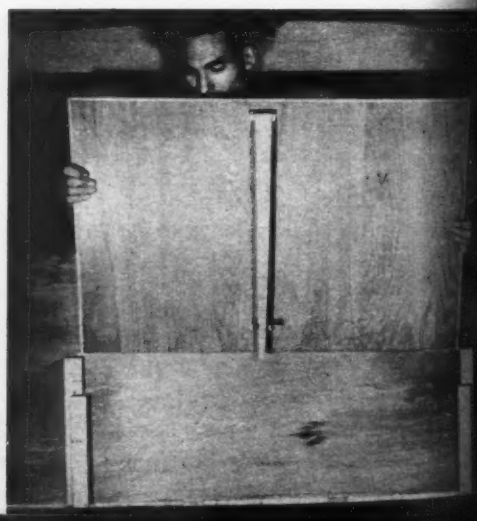
The size of the front window is up to you. However, don't make it too large or you'll risk sacrificing cabin stability. The cabin pictured here has a 10½x14-inch window which provides ample light and ventilation throughout.

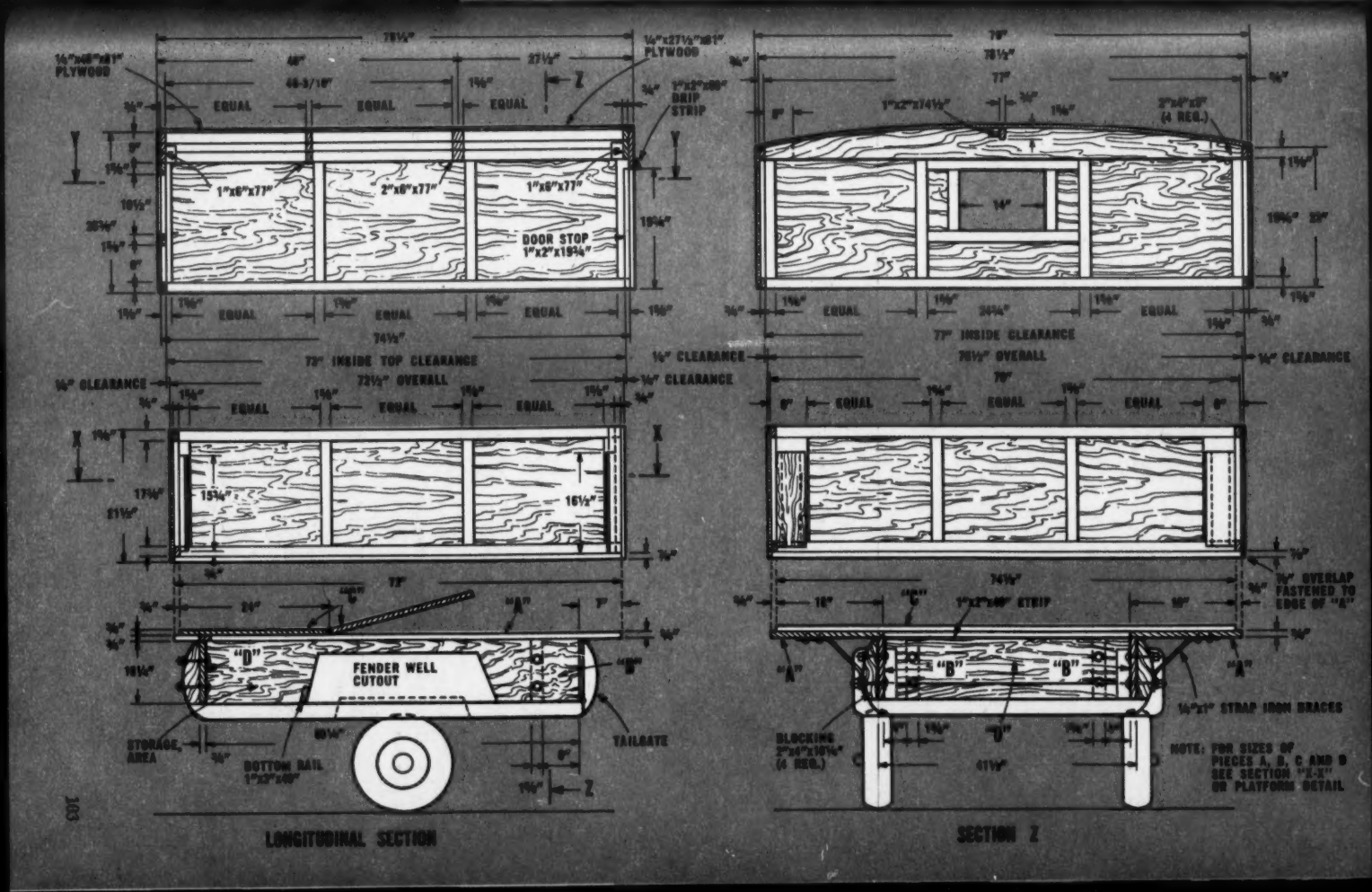
The rear panel and door of the upper section of the cabin are of ¾-inch plywood, as are the lower panel and doors. The latter have eight-inch-wide shelves butted to their bottoms and supported by steel brackets. They swing open and shut on 1½-inch hinges screwed to the 2x2's located at the corners of the lower rear walls.

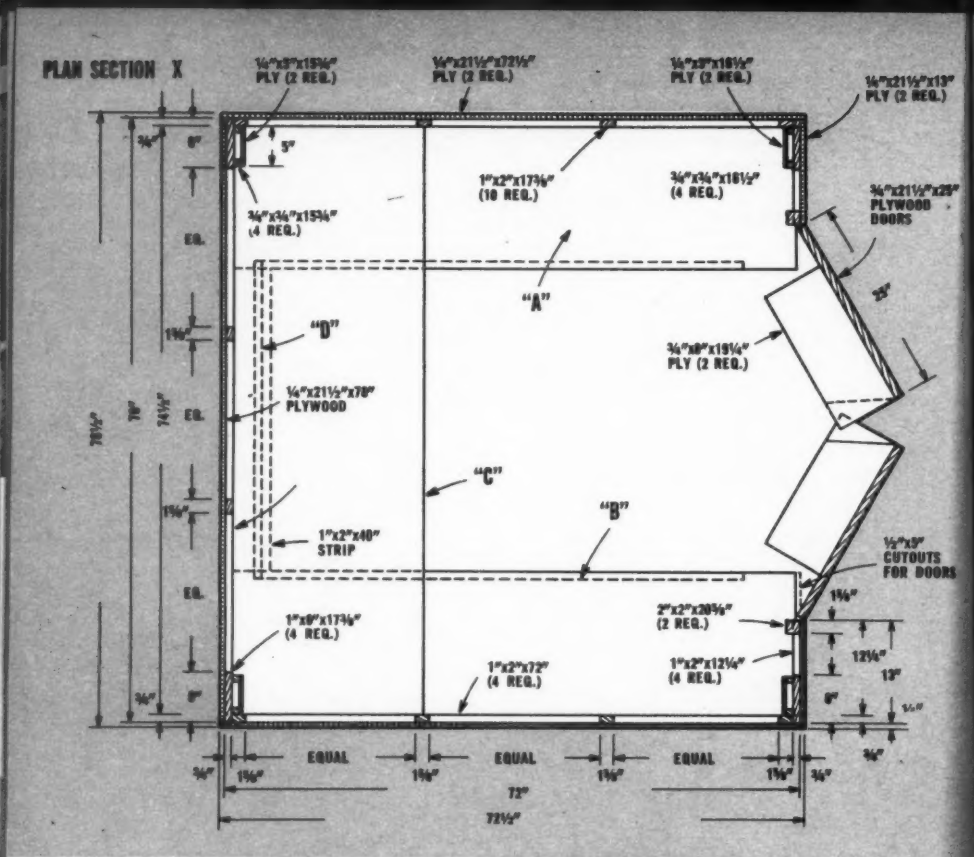
Two hinged ¾-inch plywood panels form the bed which is located at the front of the cabin. Small sliding bolts placed at each end of these panels hold them against the wall and out of the way when they are not being used.

SECOND PANEL is fastened with hinges to the first to provide sleeping room for two.

SLIDE-AWAY TABLE stands on one hinged leg. See drawing detailing construction.




LONGITUDINAL SECTION
SECTION Z
FENDER WELL CUTOUT
DOOR STOP 1"x2"x15¾"
1"x6"x77"
2"x6"x77"
1"x8"x77"
1"x2"x80" DRIP STRIP
¼"x27½"x81" PLYWOOD
¼"x48"x81" PLYWOOD
EQUAL
72" INSIDE TOP CLEARANCE
72½" OVERALL
¼" CLEARANCE
77" INSIDE CLEARANCE
78½" OVERALL
1"x2"x14½"
2"x4"x8" (4 REQ.)
1"x2"x40" STRIP
¾" OVERLAP FASTENED TO EDGE OF "A"
¼"x1" STRAP IRON BRACES
BLOCKING 2"x4"x10¼" (4 REQ.)
STORAGE AREA
BOTTOM RAIL 1"x3"x40"
TAILGATE
NOTE: FOR SIZES OF PIECES A, B, C AND D SEE SECTION "X-X" OR PLATFORM DETAIL

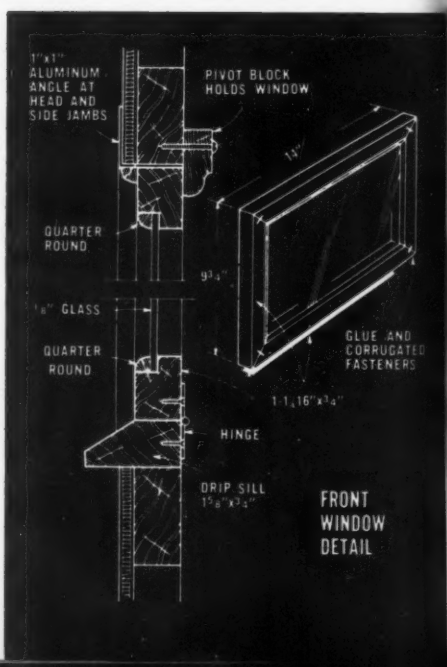


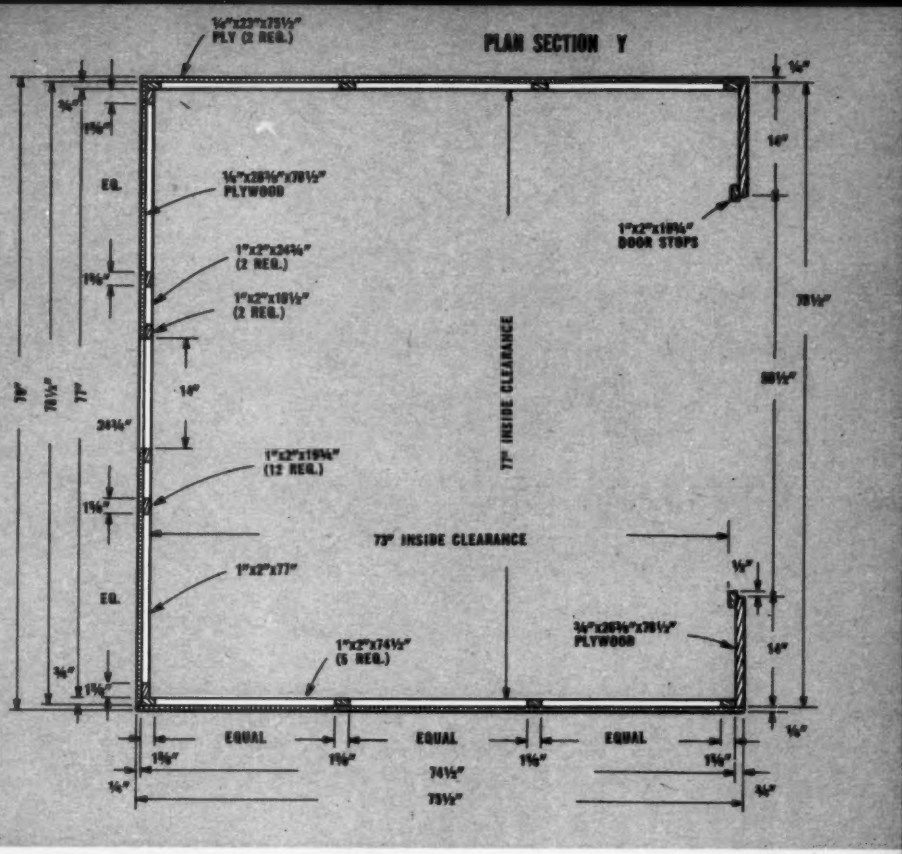
The table is a slide-away affair. It is supported by a tapered wooden leg that folds flat against the side wall for storing.

Now is a good time to seal both sections with a coat of primer paint applied inside and out. Let it dry, then seal the outside cabin corners with right-angle flashing applied with contact cement and secured with small galvanized nails.

At this point the basic structure of your cabin-trailer is complete. Hook it up behind the car and take it out on some back roads for a test run to discover how she trails and if she's well balanced and free of rattles and squeaks.

Then go to work putting on the finishing touches. These will include another two coats of exterior house paint all around and the installation of any



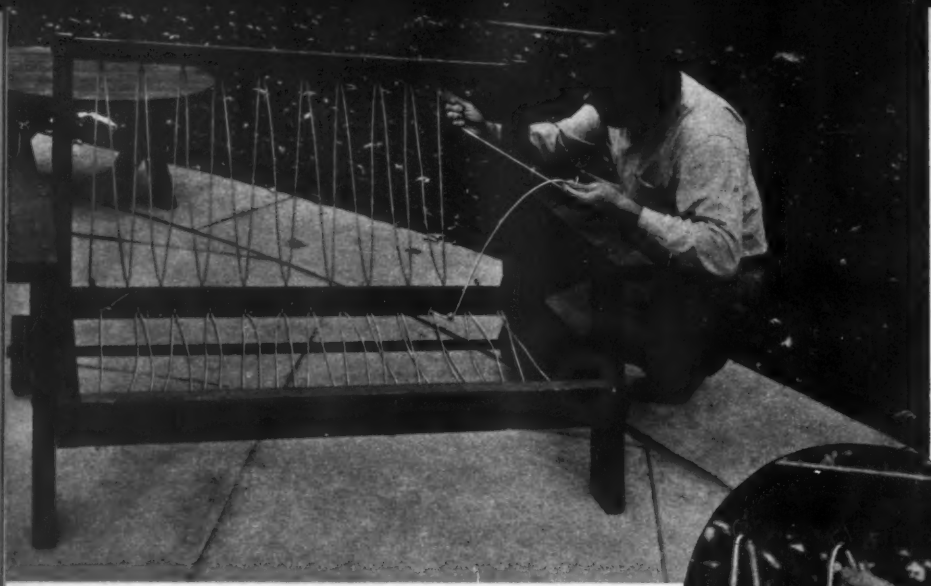


NIGHT MUST FALL—but all's well when you can check into your little cabin-trailer.

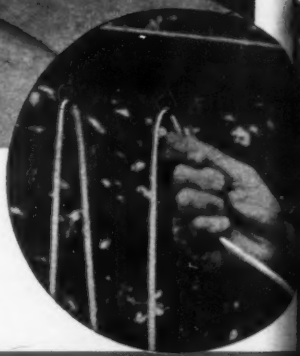
permanent fixtures inside the cabin.

Because this cabin-trailer combines durability with lightness of weight, it is ideal for the young married couple who would "rough it" on the open road or along the tourist-free byways of the country rather than be enslaved by the motel's No Vacancy signs. For the cabin-trailer is your own supremely private camp and castle that allows you to wander footloose and fancy-free under the Spacious Skies and amid the Purple Mountain Majesties of America.

When the day arrives that you set out on that long awaited vacation, you just pack your cabin-trailer with all your needs for the next two weeks and then head confidently for the most beautiful territory you can find—and never worry about looking for lodgings. •



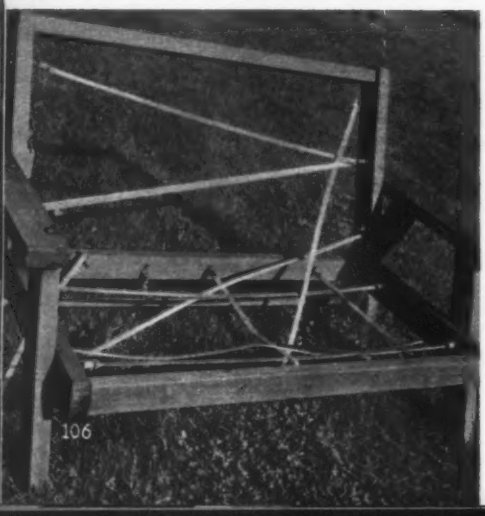
COLORED NYLON CORD is used to weave new seat and back supports to replace former springs and steel straps.



HEART of the weaving process is the open-end screw eye which engages nylon cord, as shown.

NEW LIFE FOR LAWN FURNITURE

HONEST! The sorry-looking mess that two winters and rough use can make of a settee.



John Michaels

NOW that summer is half over and you can still work outdoors it's a good idea to take a critical look at your lawn furniture. Will it be serviceable for the next season? Possibly you may have bought redwood furniture because it never needs painting. True, redwood doesn't require painting and, in fact, should *not* be painted. But a coat of stain and preservative will do wonders in making redwood look fresh and new. And of course those steel straps and helical springs have probably rusted and played hob with the upholstery. As a further improvement, you can make a set of plastic covers for off-season or rainy day protection.

The first step is to remove all the old

FIRST step after sanding and tightening hardware is to apply a coat of stain.

INSTEAD of waiting for stain to dry, proceed to sand rest of lawn furniture.

TABLES should get especial care. Sand thoroughly and apply the stain with grain.

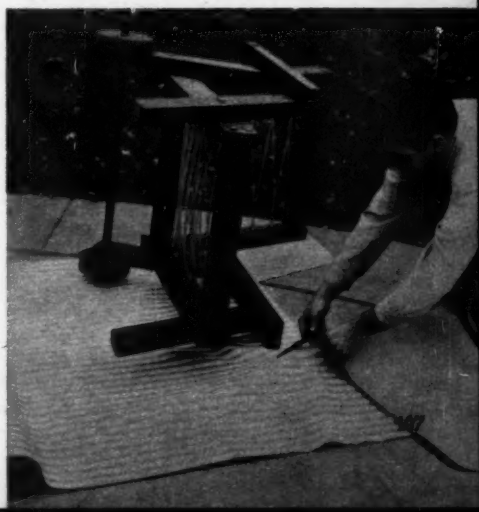
WIPE off the excess stain with a soft cloth and then allow to dry thoroughly for 24 hours.

AT LEAST two coats of an exterior wood finish should be applied to all surfaces.

steel webbing and springs. Go over every screw and bolt with a screwdriver and a wrench. You will be surprised at how much slack you will be able to take up.

You will find it practically impossible to purchase at a retail level the small springs and steel slats for replacement purposes. This is really a blessing in disguise as you will find you can do a much better job of supporting the mattress pads and backs with the method illustrated in the photographs. It is simplicity itself. A large hardware store should be able to supply you with open-end screw eyes. These No. 6 screw eyes, made by Stanley, look like ordinary screw eyes with an important distinction. The eye, instead of being flush against the [*Continued on page* 146]

CUTTING WEBLON. Cut the material four inches away from the outline of chair.



A STOOP TO CONQUER

RICKETY, undersized back-door stoop has a date with the scrap heap. Unlike Rome, that new porch pictured above was built in a day.

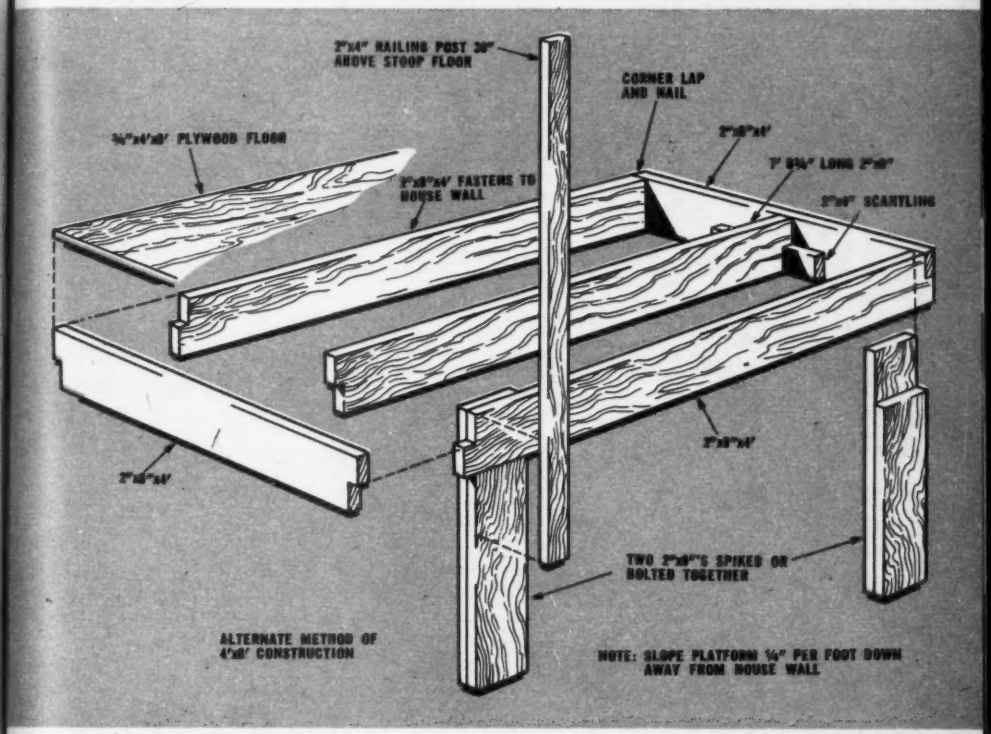
This summer replace that tacked-on gangplank with a back porch you can use!

MOST present-day back stoops are too small to sit on. Every time the back door opens or closes you're in danger of being knocked into the flower beds at the far end. In many cases the steps are too steep and the railing much too low. What to do about it?

First off, don't go hog wild attempting to build a new back

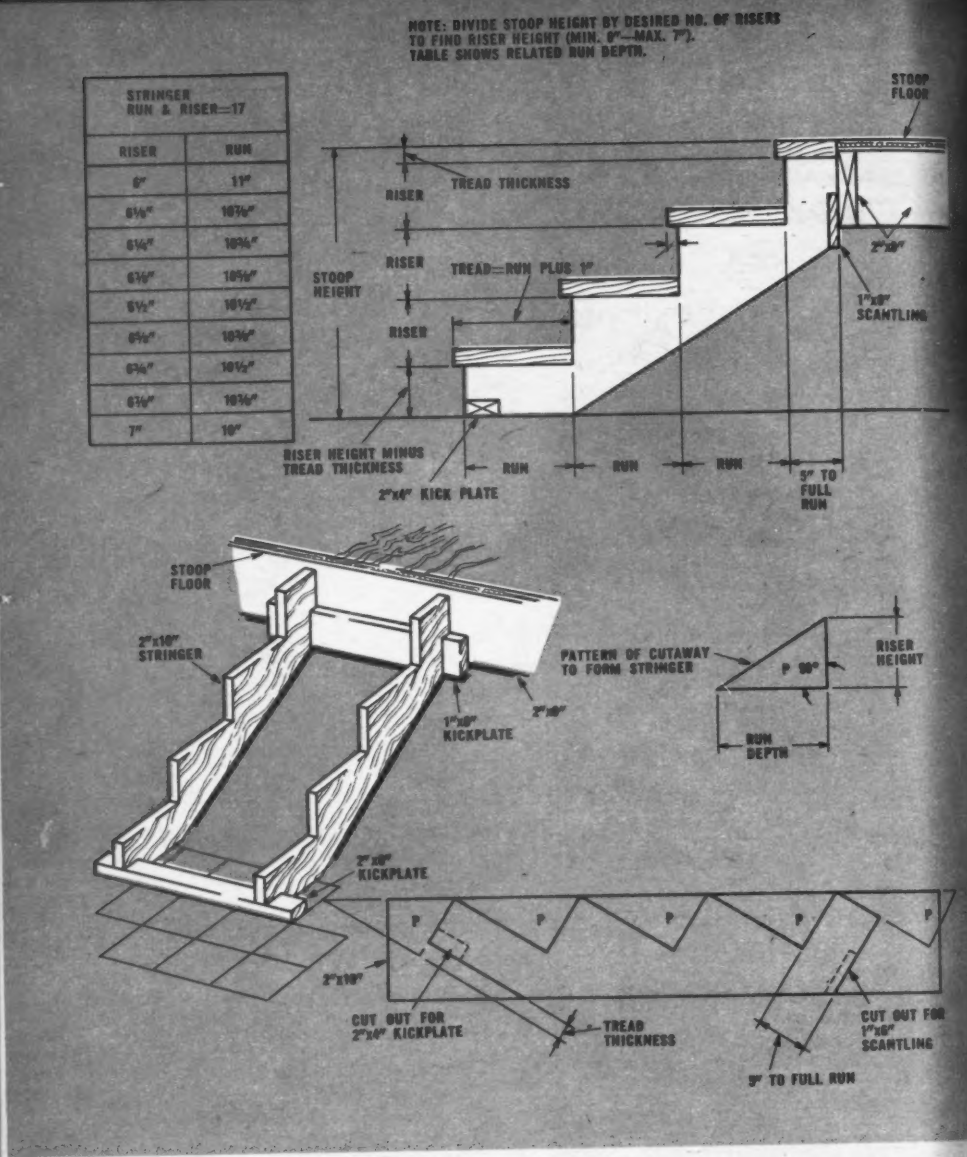
porch as big as all outdoors. Remember, it is a *re*building job, so make as much use of the old porch as you can.

A sheet of ¾-inch exterior-grade fir plywood measuring 4x8 feet will give you a floor of 32 usable square feet. Build a frame to support this and that's about the extent of your carpentry work. If you



RIP OFF the old stairs but retain the stringers to use as patterns for new ones.

FRAME is assembled on the ground, then fastened to house. Follow the plans above.



STRINGER RUN & RISER=17	
RISER	RUN
6"	11"
6⅛"	10⅞"
6¼"	10¾"
6⅜"	10⅝"
6½"	10½"
6⅝"	10⅜"
6¾"	10¼"
6⅞"	10⅛"
7"	10"

undertake to rebuild your porch much bigger than this then you get into the problem of supports and new footings, pick and shovel work, poured concrete pads below the frost line, a building permit, an increased assessment, more materials, more labor and more money. So I strongly advise that you keep it simple.

The frame can be made with 2x6's or 2x8's. You will need 40 feet: three pieces almost eight feet long (the two sides and the middle support) and two four-foot-long pieces for the ends. Your frame will have to be exactly 4x8 feet when finished, so cut the long pieces eight feet, *less* the thickness of the two end pieces (four inches), get it?

Attaching the frame to the side of the house will be your biggest single prob-

STEEL PINS fired by powder-actuated gun secure porch frame to masonry foundation.

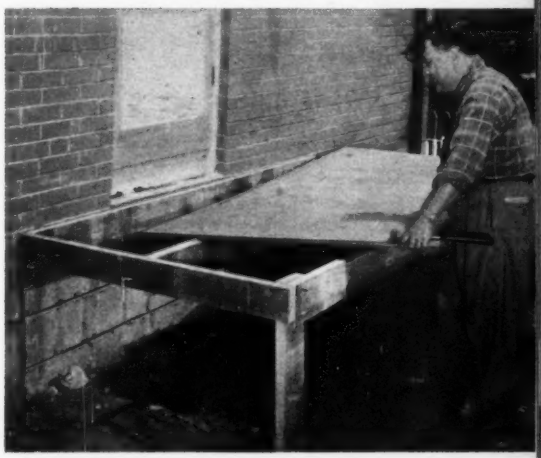
GENTLY SLOPE frame to carry off rain water; attach it to house with lag bolts.

lem. You will have to pound holes in a masonry wall with a star drill. You might be able to put new wood or lead shields in the old holes drilled by the builder, but it never has been my luck to find one of these holes just where I need it.

The two measurements you need for stairmaking are the distance from the floor or ground up to the top of the top step (the rise), and the distance out from the back of the first step to the front of the last or bottom step (the run). This *can* be tricky. Use the table here shown in the drawing.

The stringer is likely to offer a challenge to the amateur, because to lay it out requires the use of a framing square —a tool not always available to the home mechanic. In fact, you may end by having one of your carpenter friends do this job for you. However, in most cases you will be able to use the old stringer as a pattern for the new one. Six inches is recommended as the best riser height; seven inches is really too high for comfort, convenience and safety.

If possible, the stair treads should be of fir; it will wear better than the spruce I used. Particular types may insist on screwing these treads to the stringer, but you'll find that spiking them down with 2½-inch nails will hold them just as well. Now brush on two or three coats of deck paint, and your porch is finished. •



PORCH FLOOR is standard 4x8-foot sheet of ¾-inch plywood nailed to the frame.

MARK OFF stringer with a framing square, notch it, then nail on the steps as shown.

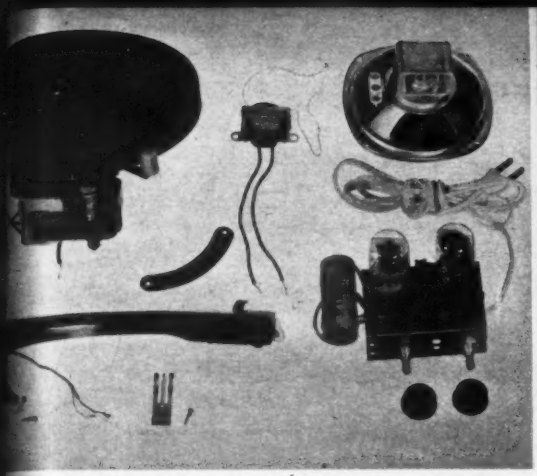
A PERFECT GIFT for teenagers is this compact, lightweight electric record player.

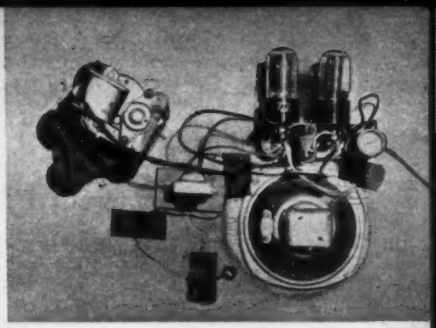
Music WHEN YOU WANT IT

Build your kids this quality portable for less than $20.

By Howard L. Slater

WHAT teenager doesn't want a portable record player? But have you checked the prices? The cheaper ones are just that—cheap, squawky and scratchy. And the better ones are veritable wallet thinners. The neatest way to disentangle yourself from this particular dilemma is to build your own.





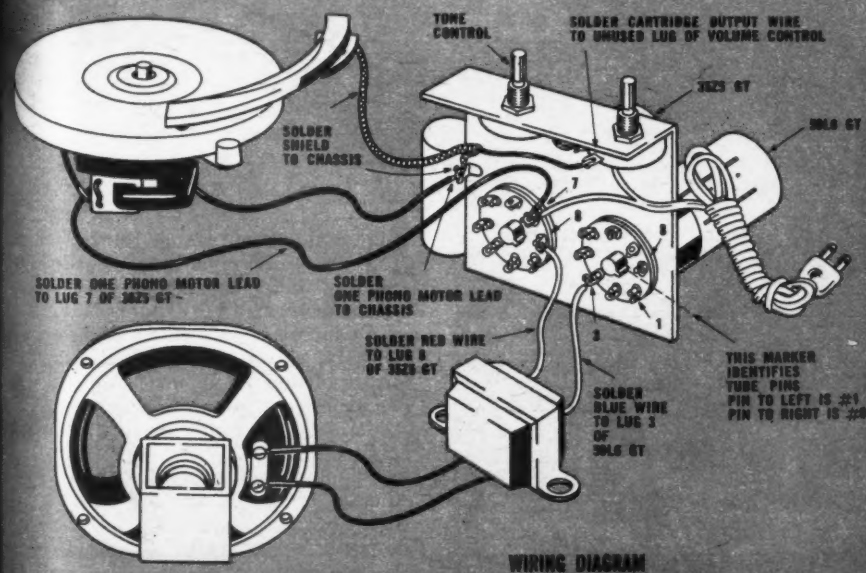
ELECTRICAL COMPONENTS that comprise phonograph are shown at left prior to installation. Above picture shows their position when installed on panel.

All this job calls for are some electrical components and a small suitcase. Here are the components you'll need:

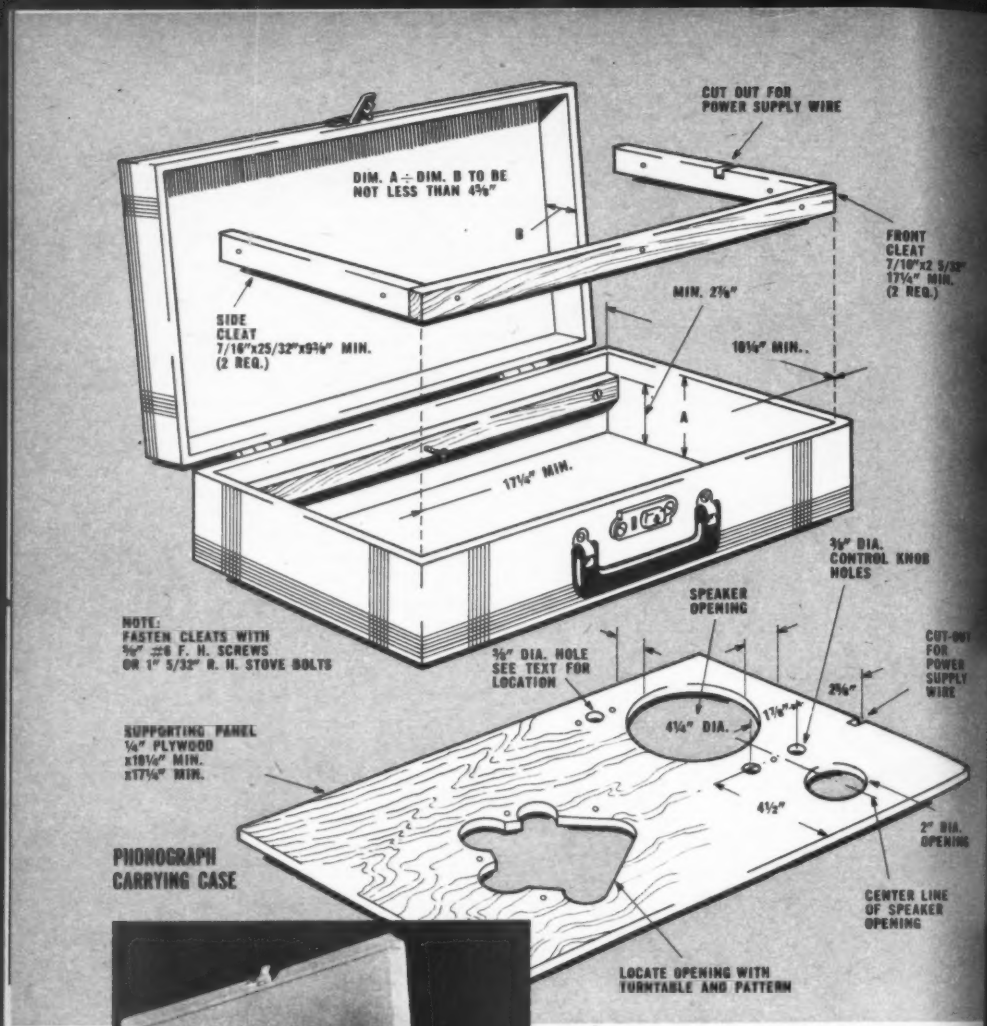
Motor & turntable	1	$5.50	ML-24
Pickup & stylus	1	2.45	PK-157
Speaker	1	1.89	SK-26
Transformer	1	.59	TR-10
Amplifier	1	4.25	PK-24
Tubes	2	.18	KN-22
Shipping Costs		1.00	
		$15.86	

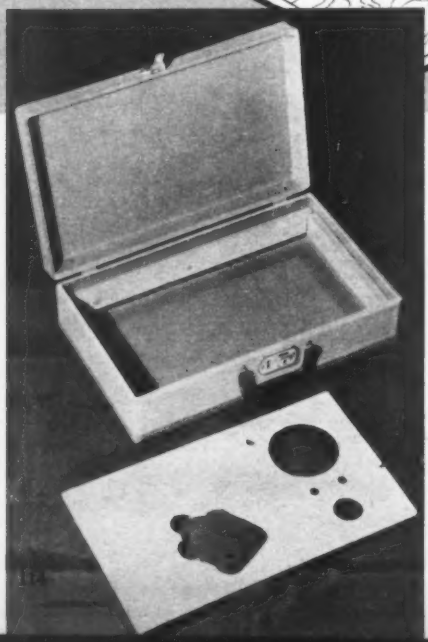
The components are mounted on a quarter-inch plywood panel cut to fit inside the case. The panel is supported on ½x1-inch wooden rails screwed into place so that their tops—in this case—are 2⅞ inches from the bottom.

To minimize the possibility of error, first make a temporary panel of corrugated cardboard cut to fit on the rails. Then, except for the motor, position all the parts on this panel with screws. Fit



WIRING DIAGRAM





the panel in place and then locate the motor and the turntable. Remember, the top of the turntable must be above the edge of the case for 12-inch records; if necessary, raise the support rails.

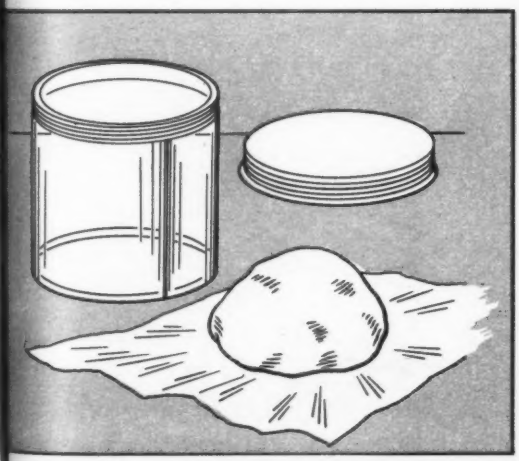
Chances are your case will differ from the one shown, so the following locations of the components and the dimensions are given only as they relate to the inside edges of this particular case.

Speaker hole: approximately 4¼-inch diameter; one [*Continued on page* 145]

WITH SUPPORT RAILS fastened inside the case and cutouts made in the panel, you can install components and assemble unit.

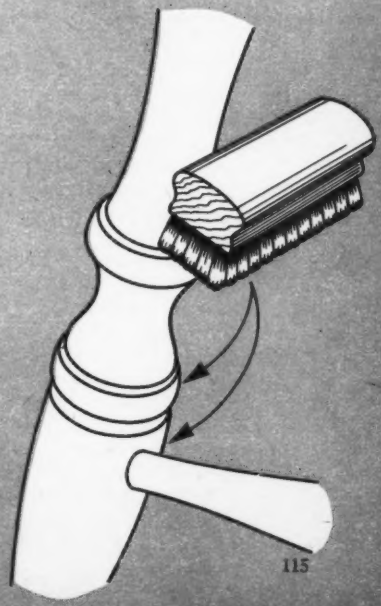
MURALS, applied like wallpaper, are available in sizes from 3x5 ft. to 6x14½ ft. Price range is $5.75 to $40. Available from Dow Mural Co., 2245 University Ave., St. Paul, Minn.

FRESH PAINT TIPS



KEEP leftover putty fresh by wrapping it in heavy wax paper and then sealing it in a jar.

SMALL wire brushes for suede shoes do a good job of removing paint (in conjunction with paint remover) from uneven surfaces.



Early American Dough Box

Most people now buy their bread, but a dough box is practical as a knitting box.

By Ralph Treves

TO a large extent, bread-baking in the home has become a thing of the past, but the once-common dough box has other practical applications because of its spacious interior and convenient surface lids. It's a natural for a knitting box and also makes an interesting piece of "antique" furniture.

Common pine, selected for grain and knots to individual preference, is a good wood to use in construction. Ten feet of 1x10-inch board is enough, plus five feet of 2x2-inch stock for the legs.

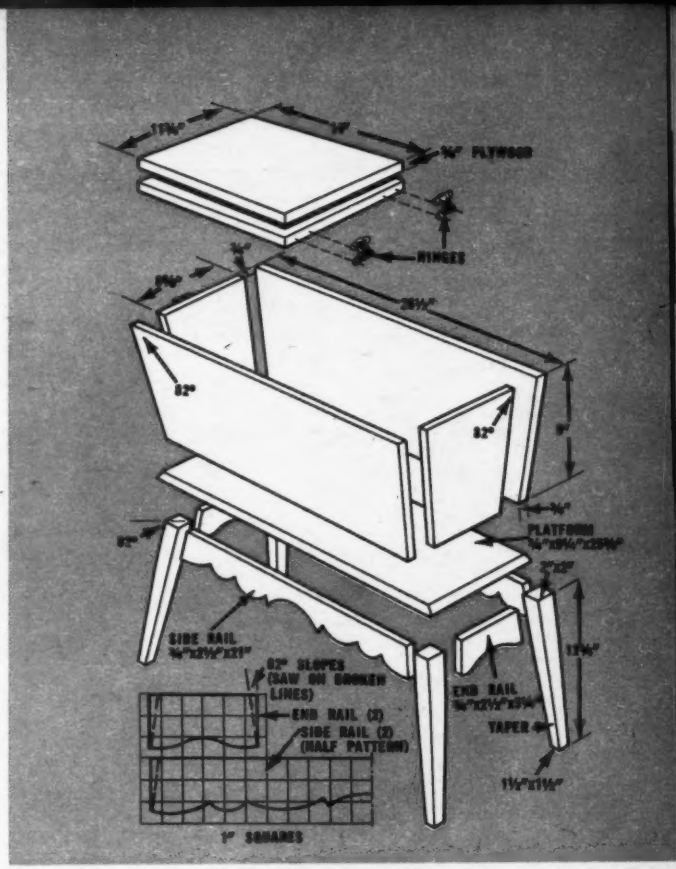
The legs are tapered and splay out from the corners. This may sound like a complicated cutting job but it's really quite simple. First draw a diagonal line across the end of the leg and then set the miter gauge on the circular saw to 82°. Then place the leg against the back fence, line up the diagonal line with a

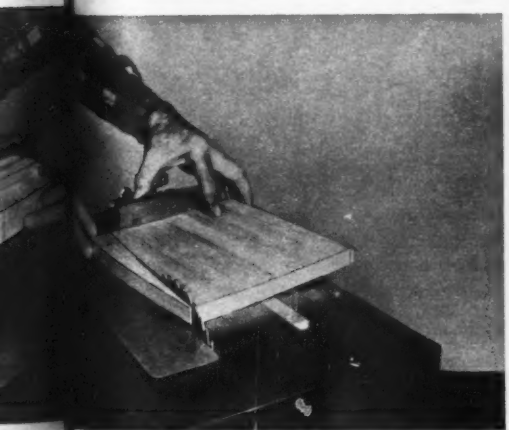
LEGS are tapered on the two inner sides from a point just below the side and end rails. Note the use of the taper jig; it speeds this part of the job considerably.

try square so that it is vertical and run the work through the blade. Repeat this for each end of the four legs.

The angle of the taper on the legs isn't critical but the taper jig should be locked so that all legs are cut uniformly. Make two taper cuts (one on each inner side of the leg) so that the foot narrows down to 1½ inches square. The legs are fastened to the platform with screws and the pattern-cut rails are then fitted in and also fastened with screws.

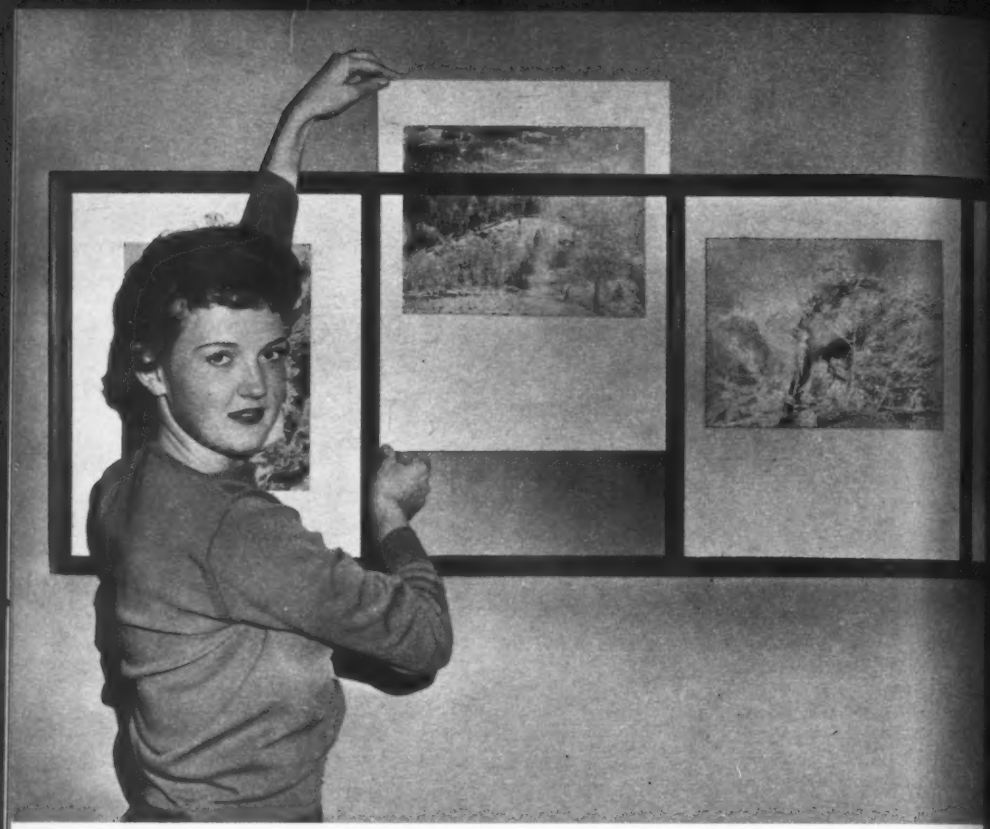
The box is easily made as shown with half the lid permanently fastened and the other half pivoting on a pair of recessed hinges. The Soss hinges illustrated are a type which expand and can't be seen when the lid is closed. •





FOUR SIDES of the box are cut at an 82° angle to give the outward flare. This, of course, necessitates beveling the top and bottom edges so that they will be level.

THE BOX is assembled with nails which are counterset and covered over with wood dough, but it is fastened to the platform with long, thin screws driven from below.



CHANGE-A-PIC FRAME

All your pictures get a chance for display in this multiple frame which allows fast changes.

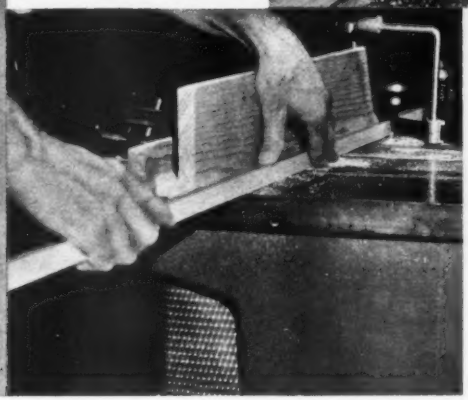
By J. F. Shirck

EVERY picture is made to be seen but many never are because space is often limited and changeovers in conventional frames are inconvenient. The Change-A-Pic frame is not only an interesting wall decoration, it enables you to vary your picture display as fast as you would slip a letter out of and into an envelope.

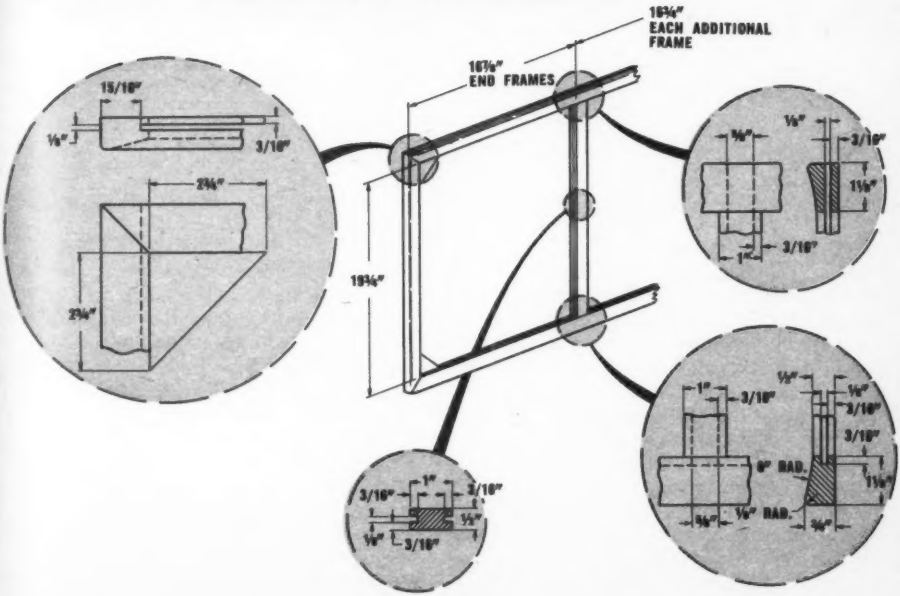
Designed so that 16x20-inch mounting boards can be inserted or removed through a slot in the top member, the four-picture frame is easily made from ¾x1⅛-inch stock, which is used for the top, bottom and sides, and ½x1-inch stock which forms the vertical dividers. The top and bottom members are 68¼ inches long and the sides are 22 inches.

Construction is clearly detailed in the drawing, but some experimentation may be required to find the exact combination of miter angle and blade height to make the cove cut. Use the instructions in the photo captions as a guide in setting up for both the bevel cut and the angular run over the saw blade which will concave the outer frame members. •

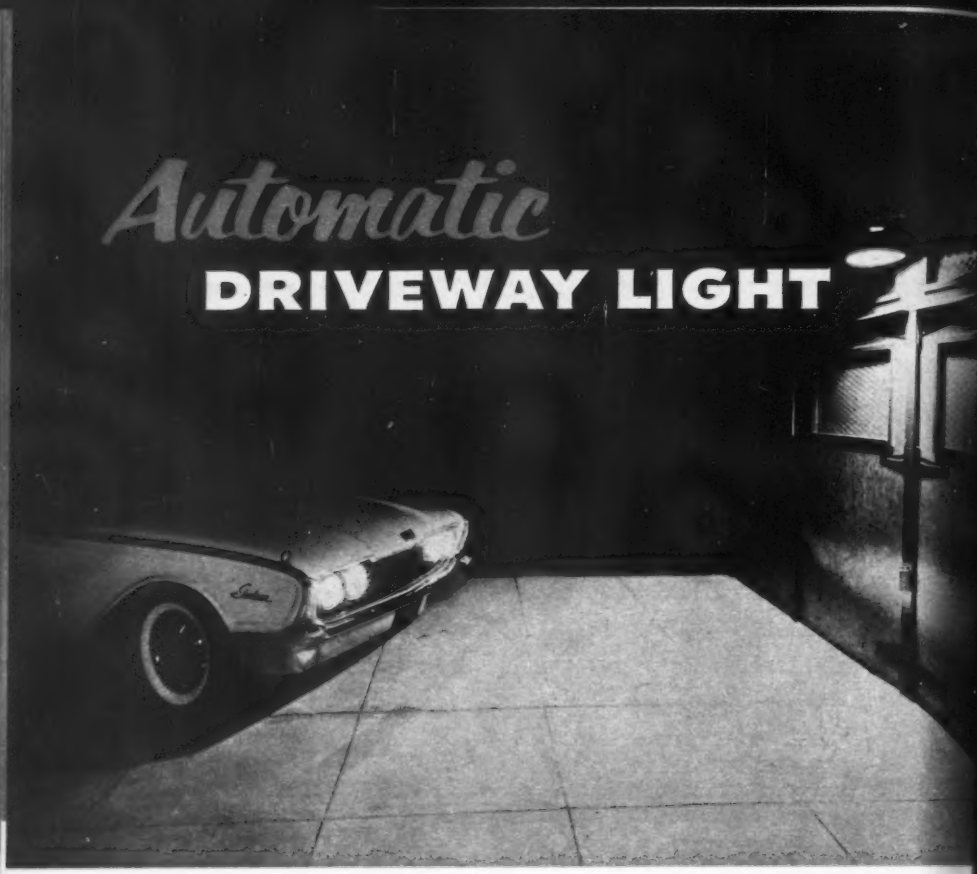
FRAMES SIDES are beveled in preparation for the cove cuts. Angle of the blade is about 12°.



COVE CUT is made by passing molding over a 6-in. blade. Miter gauge, used as fence, is set at 75°.



Automatic DRIVEWAY LIGHT



Your headlights trigger an electronic device which automatically illuminates your driveway.

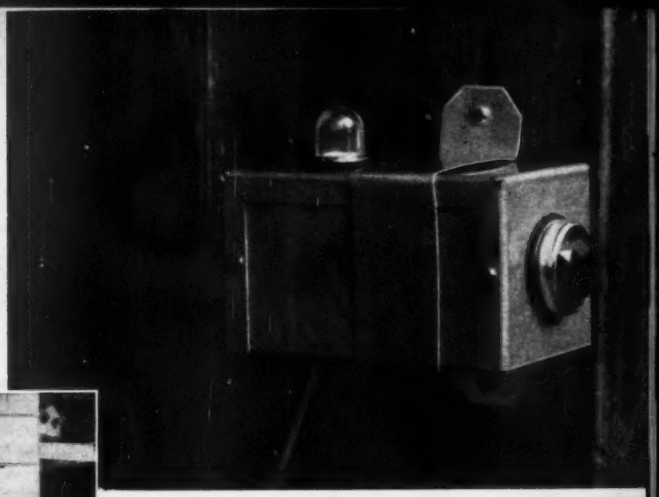
By Harvey Pollack

WITH the newspapers full of frightening stories about prowlers who lurk around dark driveways, you cannot afford to risk the safety of your womenfolk when it can be reasonably assured by the installation of this automatic driveway floodlighting device. This electronic robot causes your driveway and other dark areas to be illuminated as you drive up to the garage. The lights remain on as you garage your car, then stay on for five to seven minutes while you walk to the house. At the end of this interval they turn off automatically.

During the daytime hours, whether the sky is clear or overcast, the electronic "brain" renders itself inoperative automatically. If another car should pull into your driveway to make a U-turn at night, the lights will come on but will go out immediately provided the car withdraws within 20 seconds.

Since no tube filaments are lit during the idling periods, and the current drain in other parts of the circuit is negligible, there is nothing to wear out. Thus the device should give you many years of trouble-free service.

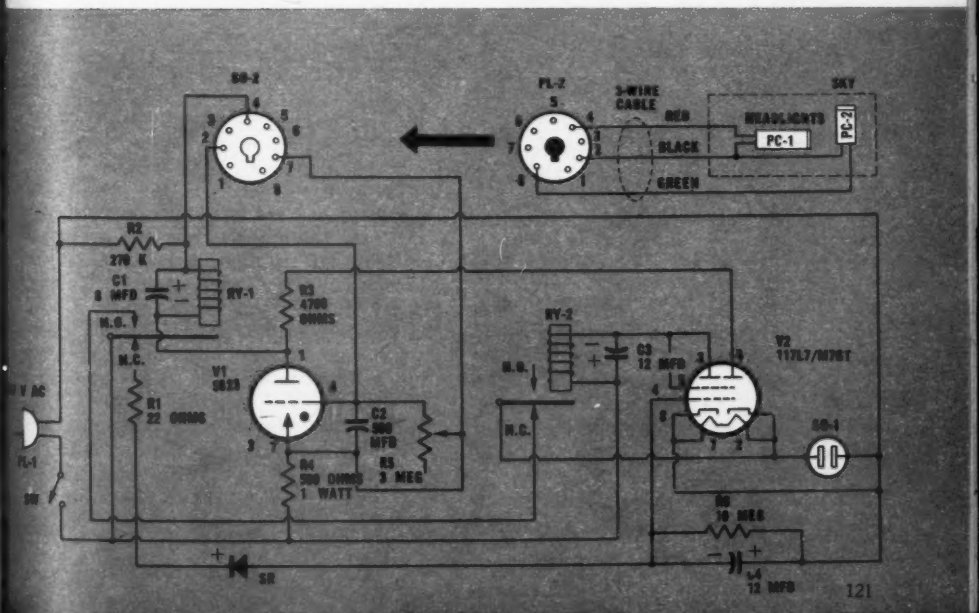
How it operates. The eyes of the system consist of two Clairex type

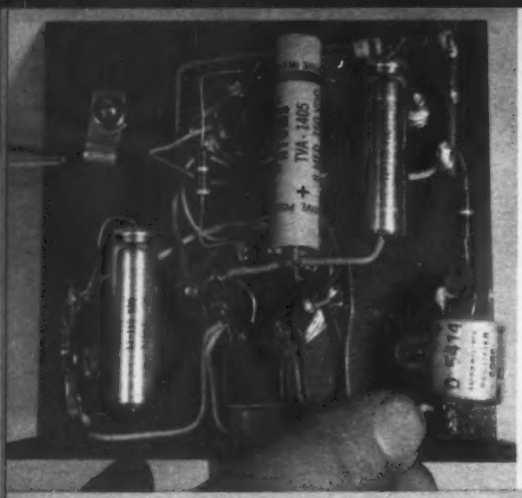


MINIBOX houses the light-sensitive triggering device. Mount box to the garage door frame at headlight level by means of an aluminum strap.

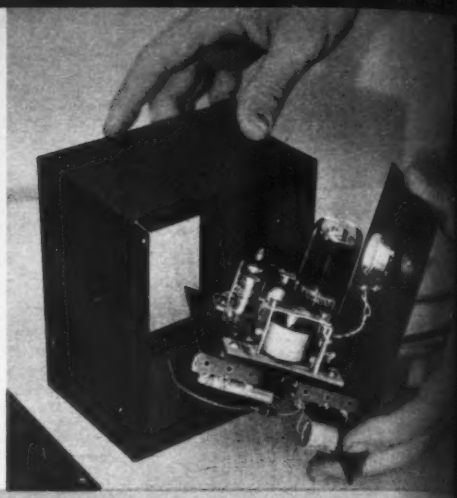
CL-3 photoconductive cells, one aimed toward the approaching headlights and the other at the sky. Both cells are enclosed in a weather-proof aluminum Minibox.

When the sky is dark, the "skywatching" photocell develops an extremely high resistance and may be considered as an open circuit. The headlight-sensing photocell (PC-1 in the drawings) is connected to the grid of a cold-cathode thyratron, a 5823. As long as no light falls on PC-1, the thyratron draws no current, but when illuminated it drops





FINGER POINTS to selenium rectifier in the metal cabinet of the control assembly.



CONTROL ASSEMBLY is mounted on built-in chassis which is a part of this cabinet.

INDICATOR KNOB on control assembly sets photocell unit at desired light sensitivity.

sharply in resistance and causes the grid of the thyratron to swing positively so that it fires. So doing, it pulls in the armature of RY-1 and closes the normally open (N.O.) contacts. Note that the armature is connected to one end of the AC line.

Thus as the relay pulls in, this end of the line is connected to the normally closed (N.C.) contact of RY-2 and through the armature of RY-2 to both tube heaters of the 117L7/M7GT and to one terminal of the output sockets SO-1. This turns on the floodlight power —since the light is plugged into SO-1— and begins to heat the tube. The heating time is about 20 seconds.

After the headlights have been on PC-1 for this period, the 117L7/M7GT has heated sufficiently so that its rectifier section (pins 2, 1, and 6) begins to pass current. The current flows through R3 directly to the relay and causes RY-1 to latch-in and stay in even when the headlights are turned off. Thus the floodlights are made "automatic."

Now let us see why they extinguish themselves after five to seven minutes. Note that when RY-1 is not energized (during its idling time), its armature touches the lower contact (N.C., normally closed), carrying power to the selenium rectifier, SR. This charges C4 negatively on the left side and, since this side is connected to the control grid of the amplifier section of the 117L7/M7GT, the grid is also very negative with respect to its cathode. Thus the amplifier is cut off so that no plate current can flow through RY-2—and nothing happens. [*Continued on page* 142]

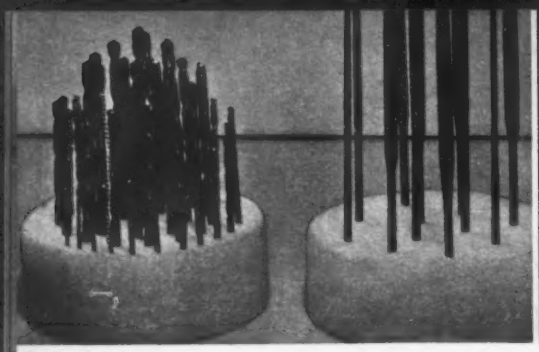
NEW GARDEN SPRAY

Garden hose and water pressure are used to spray insecticides and weed killers.

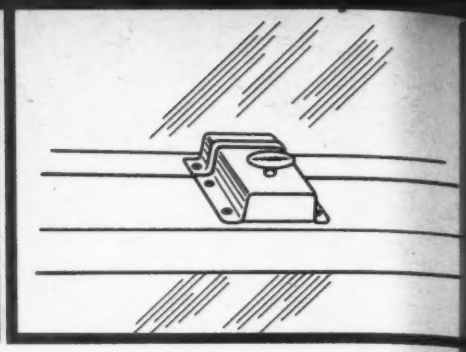
First step is to add a measured amount of herbicide to water in dispenser jar.

Next insert recommended nozzle for type of material to be sprayed. Three nozzles are supplied: 10-gallon for coarse, 5-gallon for medium and 2-gallon for fine spray. The coarse spray is for treatment of lawns.

GARDENERS and home owners, in their never-ending battle against crab grass and insects, will welcome a new type of garden spray equipment put out by the Du Pont Company. It consists of a plastic-reinforced glass jar, a cap with an outlet for your garden hose, three especially designed nozzles and a variety of 20 garden chemicals to take care of all hazards, from aphids and mites to crab [*Continued on page* 146]

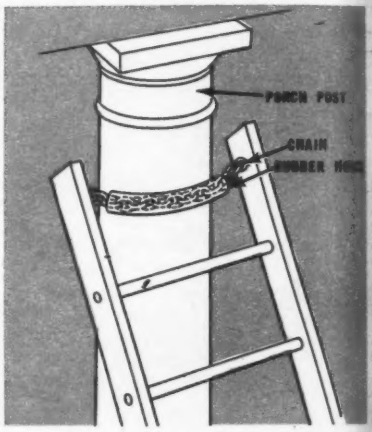


FOAM PLASTIC blocks make good holders for your drills, files and other small tools.



WINDOW locks automatically when shut if twist lock is replaced by cupboard catch.

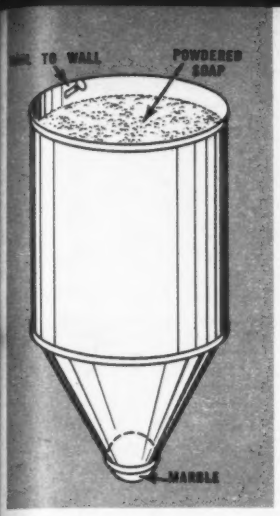
HOME AND SHOP SHORTS



LADDER rests securely on post if rubber-covered chain is used at top.

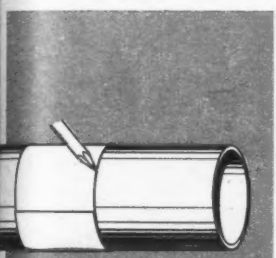
Send Freddie Fumbles your idea of a good short-cut time-saver or safety device in your work, whether it be in the home, shop, office or farm. Each tip accepted will be paid for at the rate of $10. Naturally we cannot acknowledge or return the ones we cannot use. However all will be carefully read and evaluated. (Those which we can use in other departments of MI will be paid for at our regular rates.) Please send in your ideas on a post card only. Address to Freddie Fumbles, *Mechanix Illustrated*, 67 W. 44th St., New York 36, N. Y.

FREDDIE FUMBLES

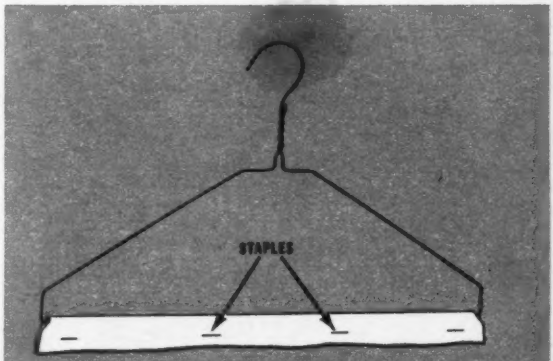


SOAP dispenser is soda can with marble in funnel neck.

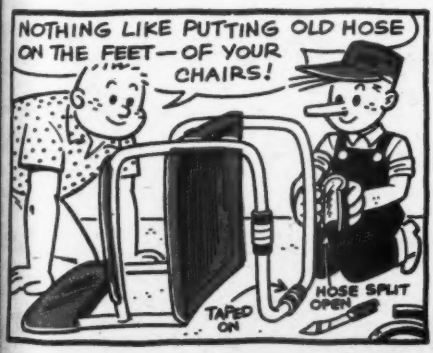
DRILL STOPS for drilling blind holes are made from thread spools which are cut to size with a hack saw.



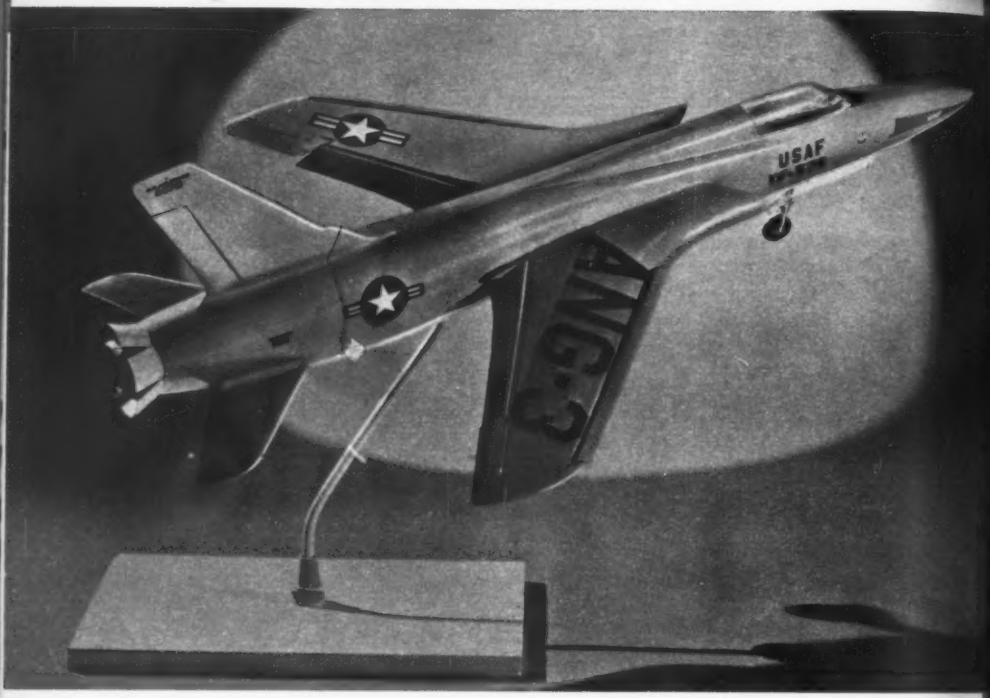
TO CUT pipe squarely, wrap strip of paper 1½ times around as guide.



CARDBOARD crease preventers will not fall off wire hangers if they are held by a few staples.



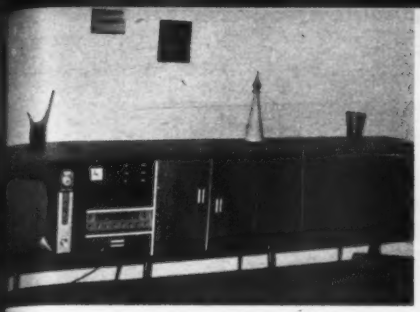
Golden Hammer Award Winners



SCALE MODEL F-105 Fighter, built over 1,200 hours by William Schiffrin, Levittown, N. Y., incorporates a jet engine in break-away tail section, retractable landing gear.

The following craftsmen have been awarded GOLDEN HAMMER TIE BARS for their projects: Franklin J. Cortese, Houston, Pa. . . William Yanky, Jackson Heights, N. Y. . . Norman Gilbert, Winslow, Me. . . Curtis W. Toombs, Ashland, Ky. . . Bob Raczka, Chicago, Ill. . . Benjamin F. Davis, Groveland, Mass. . . H. F. Howes, Castlegar, B. C., Can. . . Charles J. Skittino, Jr., Techny, Ill. . . Richard E. Werstler, Avon Lake, Ohio . . . Albert J. Taylor, Southampton, Pa. . . Bill [Continued on page 146]

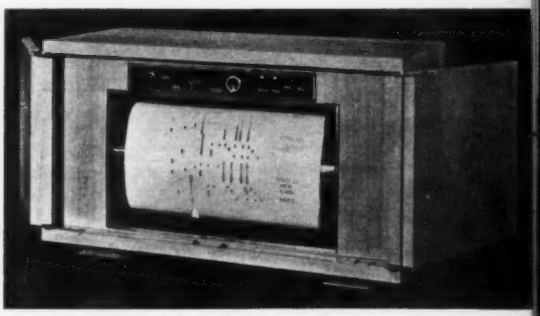
Each craftsman whose project is shown receives a 24-karat gold-plated Hammer and a Workbench Award Certificate. Runners-up will be sent a beautiful gold-plated Golden Hammer Tie Bar or MI's Certificate of Merit. So send us some *black-and-white photos, with negatives*, and a full description of your latest project. Photos of your workshop are also eligible. Send all entries, with return postage, to MECHANIX ILLUSTRATED Golden Hammer Awards, 67 West 44th St., New York 36, N. Y. Entrants are advised that MECHANIX ILLUSTRATED cannot accept responsibility for customs charges, duties, taxes, etc., levied against Golden Hammer and Golden Hammer Tie Bar winners outside the United States.



FOUR-SECTION HI-FI ENCLOSURE includes TV, stereo AM-FM tuner, record player and tape recorder. An example of the craftsmanship of Ralph Frost, Wilkes Barre, Pa.

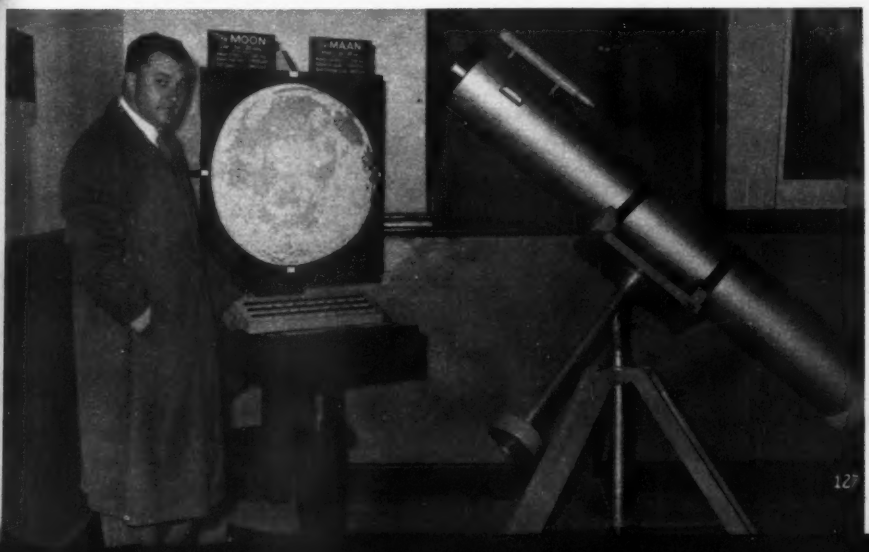
SIX-ROOM HOUSE was constructed by Paul Uccello, Winchester, Mass., during his spare time. He did everything except the plumbing, plastering and electrical work.

PINT-SIZED CORVETTE was made for his two sons by Milton Galke, Milwaukee, Wis. Car has Fiberglas body, two-hp engine and does 30 mph. Cost: $250, five months' work.

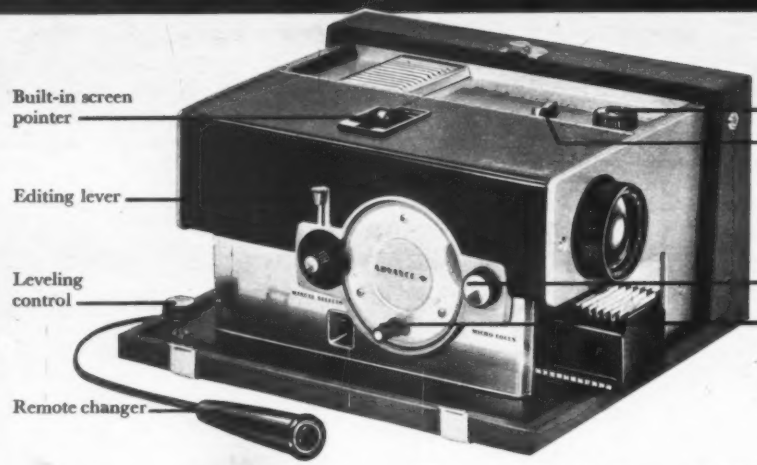


INVENTOR AND BUILDER A. R. Green of Cincinnati, Ohio, says that his electromechanical device (above) will transform any piano into a player piano in one hour.

TELESCOPE and model moon were conceived and built by Dennis Fisher, Paarl, South Africa; buttons on control panel light up particular seas and craters of his moon.



New Ideas in Photography



Automatic Projector Changes Slides 4 Ways

No glaring screen between shots

Here's an automatic slide projector that gives you a choice of *four* ways to change slides—and makes you a master showman with them all.

The Kodak Cavalcade Projector changes slides *for* you automatically at intervals of 4, 8 or 16 seconds . . . lets *you* change them by remote control . . . or by push-button . . . or by manual wheel.

You can put on a show at the pace you want. Take as much time between slides as you need to explain them to guests. The Cavalcade Projector's controls let you hold slides, skip over some, repeat others—even on fully automatic. Between slides, there's no glaring screen. Time interval between slides is less than one second.

Ask your dealer to demonstrate all these superb features. Kodak Cavalcade Projector, Model 510, with 5-inch *f*/2.8 lens, $159.50. Or as little as $16 down at many dealers'.

Picture it now—see it again and again!

Compact Brownie Star Cameras Lead to New Trend in Low-Cost Picture-Taking

A few years ago, many people were content to go on using an old-type box or folding camera, no matter how bulky or heavy it was.

Then along came the modern Brownie Star Cameras—small, light, easy to use—to make picture-taking more fun and more convenient for millions.

Brownie Star Cameras are modern four ways. They're compact, palm-size. Easy to use: no focusing. Versatile: take snapshots *and* color slides. And two have a built-in electric eye to assure correct exposure every shot. Yet prices begin at only $6.25! Go take a look—and see how modern a low-cost camera can be.

Brownie Starlet Camera, $6.25

Brownie Starmite Camera, $10.50

Brownie Starmeter Camera, $19.95

Brownie Starmatic Camera, $29.95

rom Kodak

siles or Microbes: New Faster or Movie Film Tracks Both Easily

r-sensitive color motion-picture films re- ly introduced by Kodak are being used as erful new data-collecting aids for science.

Known as Kodak Ektachrome ER Films, they true and sharp enough to capture the faint ges in a missile's flame pattern . . . to permit roscopic movies of cell division and tissue ure without dangerous hot lights . . . and to enlarge man's knowledge in many other where high-speed color photography has been practical before.

The ER films have the same speed and fine in as the sensational new Kodak High Speed achrome Films, which permit 35mm photog- kers to shoot pictures they never could before, indexes of 125 in artificial light, and an amaz- 160 in daylight! They are part of Kodak's inuous search for finer films for every area photography.

Extra speed of new Kodak Ektachrome ER Films permits scientists to record a missile's performance in both color and extreme slow-motion detail.

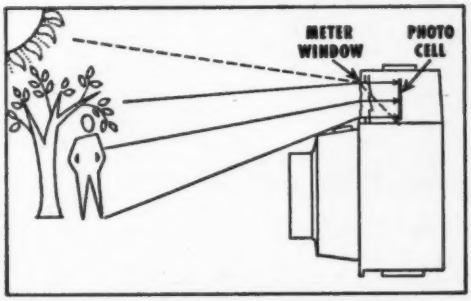
ter in Kodak Electric-Eye Cameras mpensates for Too-Bright Sky

hen you use an ordinary exposure meter, you st tilt it down to allow for sky brightness.

This isn't necessary with Kodak's new auto- tic electric-eye still cameras, because engineers ve built the meter "tilt" right in! You just aim e camera directly at your subject, and shoot. e meter window (see diagram) diverts part of e sky light away from the sensitive photocell— mpensating automatically for sky brightness!

This is why, with normal subjects, these meras assure you correct exposure—"a good t every shot." Let your Kodak dealer show u the automatic Brownie Starmatic Camera, ly $29.95; the Kodak Automatic 35 Camera, 9.50. Look at the Kodak automatic movie meras, too. These cameras will introduce you to e new automatic electric-eye era of photography.

ses are list, include Federal Tax, and are subject to change without notice.



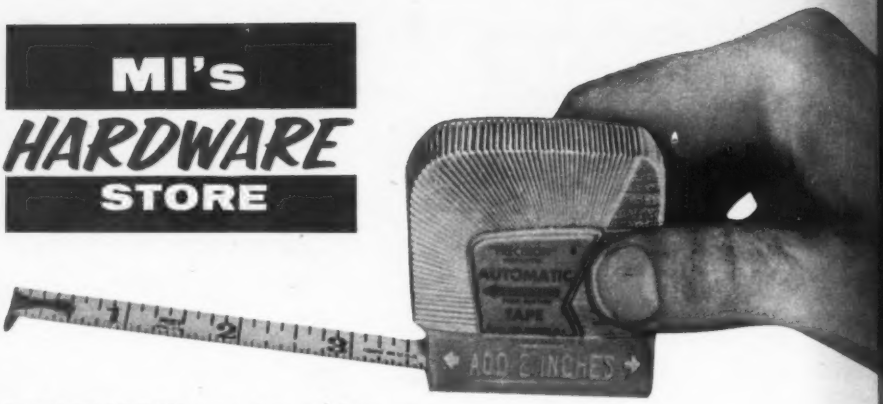
Electric eye of Kodak automatic camera measures light from subject, automatically refracts part of bright sky light to assure correct exposure.

Kodak Automatic 35 Camera, sets own lens, $89.50

ASTMAN KODAK COMPANY, Rochester 4, N. Y.

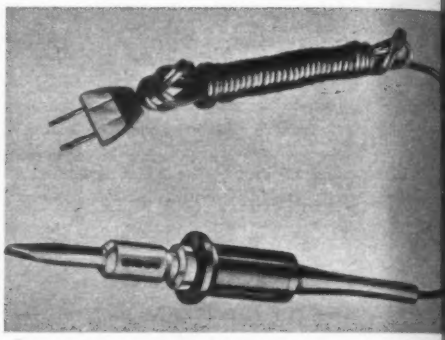
E KODAK'S "ED SULLIVAN SHOW" AND "ADVENTURES OF THE NELSON FAMILY"

MI's HARDWARE STORE

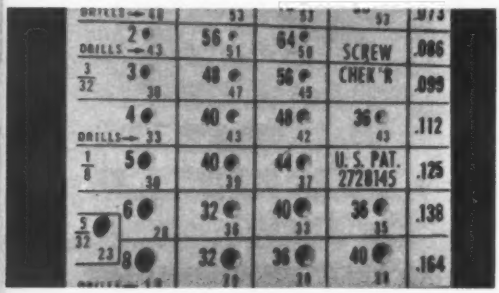


RATCHET-ACTION tape has markers at 16-in. intervals for studs; 12-ft. size, $2.60.
Flash Mfg. Co., 169 Murray St., Newark 5, N. J.

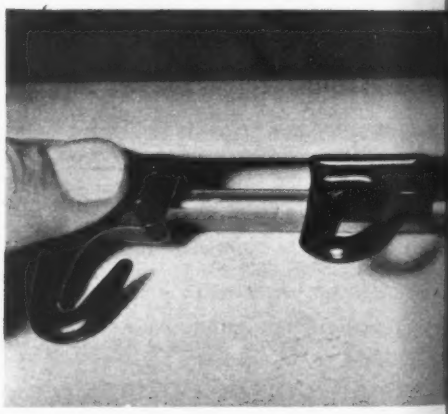
PONY—a rechargeable battery and plug-in charger for transistor radios. $4.95.
B&K Mfg. Co., 1801 W. Bell Plaine Ave., Chicago 13, Ill.



PENCIL SOLDERING IRON has interchangeable tips; available at radio-TV shops.
Sidco, P.O. Box 192, Venice, Calif.



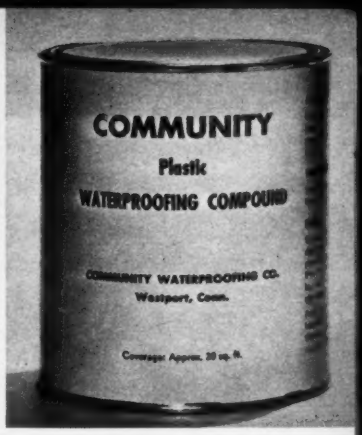
SCREW CHEK'R gives all dimensions for bolts, screws and taps to 5/16 in. $1.75.
Ruelle Bros., P.O. Box 114, Ferndale 20, Mich.



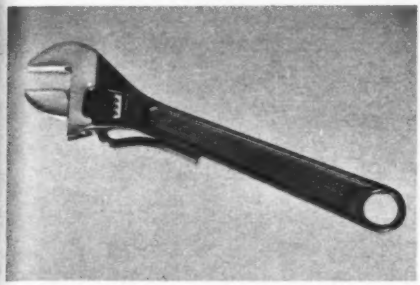
NEW CLOSET ROD with black nylon carriers glides clothes toward you at a touch.
Grant Pulley and Hardware Corp., High St., W. Nyack, N. Y.

HOT BLAST paint scraper combines a propane torch with scraping attachment.
Turner Corp., Sycamore, Ill.

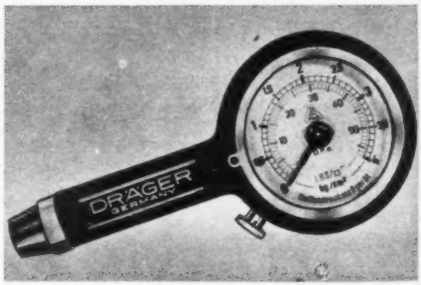
FLAME TAMER waste receptacles snuff out, by suffocation, any fire that might start up in them.
Rock Royal Corp., 120 S. LaSalle St., Chicago 3, Ill.



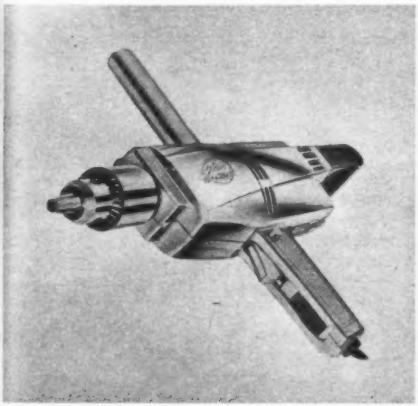
WATERPROOFING material seals up masonry and stops seepage; 1 lb., $4.95.
Community Waterproofing Co., Dept. 21, 10 Redcoat Rd., Westport, Conn.



ADJUSTABLE wrench has hex key for jaw tightening. Can be used as portable vise.
Border Wrench, P.O. Box 394, Montrose, Calif.



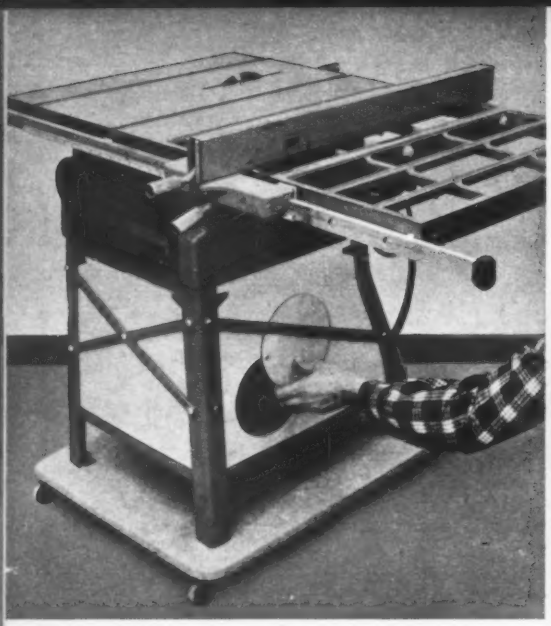
GAGE compensates for outside air pressure, gives accurate tire pressure; $4.95 with case.
EMPI, Box 668, Riverside 3, Calif.



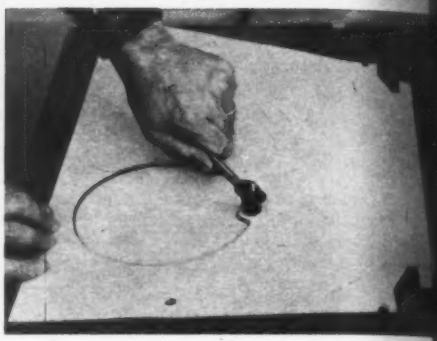
NEW LINE of Thor Speed Drills have three-conductor cords, ball and Oilite bearings.
Speedway Div., Thor Power Tool Co., 1421 Barnsdale Rd., LaGrange Park, Ill.

A booklet containing eight plans for simply-constructed furniture pieces is available for the asking from National Plastic Prod. Co., Advertising Dept., Odenton, Md. . . New magnetic dipstick removes steel grit from engine oil; give make, year, model and number of cylinders of car when ordering from Electronic Research, 2861 Military St., Port Huron, Mich. —$2.95 ppd. . . A large list of boarding and breeding kennels in the U. S. is contained in the booklet, Where To Buy, Board Or Train A Dog, available free from Gaines Dog Research Center, 250 Park Ave., N. Y. 17, N. Y.

SAWDUST COMPARTMENT



DOOR in side pivots so that compartment can be emptied of sawdust when necessary.

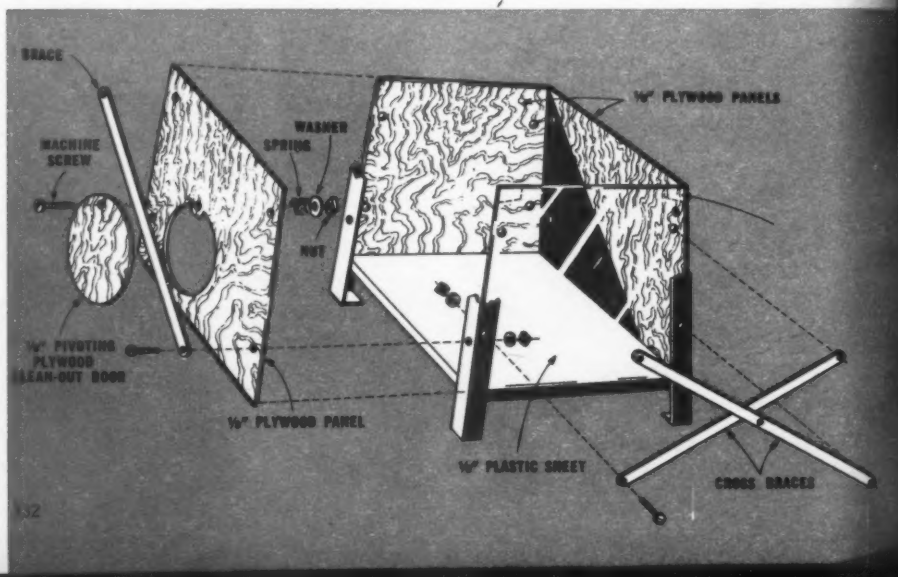


SPRING on shaft of pivot bolt provides tension to keep door flush against side.

THE open-frame support for a circular saw allows sawdust to fall freely to the floor where it is tracked about the shop and often ends up in other rooms of the house. If the frame area is closed in with paneling to form a sawdust compartment, the work of cleaning up the mess after a cutting session is eliminated.

Since a horizontal metal panel is generally used to brace the legs of the support, it can serve as the bottom of the compartment. The sides are made from three sheets of ⅛-inch fir plywood and one sheet of ⅛-inch Plexiglas. The clear plastic makes it possible to see when the compartment needs emptying.

For access [*Continued on page* 156]



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Add lasting color to outdoor wood with WELDWOOD EXTERIOR STAINS . . .

Seal and prime outdoor wood with WELDWOOD FIRZITE . . .

Protect and beautify outdoor wood with WELDWOOD SPAR VARNISH . . .

LDWOOD® WOOD PRESERVATIVE, essential where wood is in tact with earth, contains full 5% pentachlorophenol.

DWOOD EXTERIOR STAINS, 4 beautiful "woodsy" colors: dwood, Driftwood, Cascade Green, Sierra Brown.

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LDWOOD SPAR VARNISH, durable, high gloss exterior clear sh that resists discoloring even in severe weather.

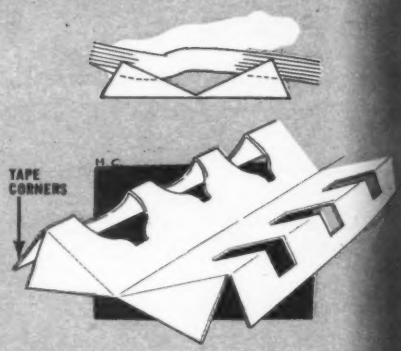
WELDWOOD
WOOD FINISHES

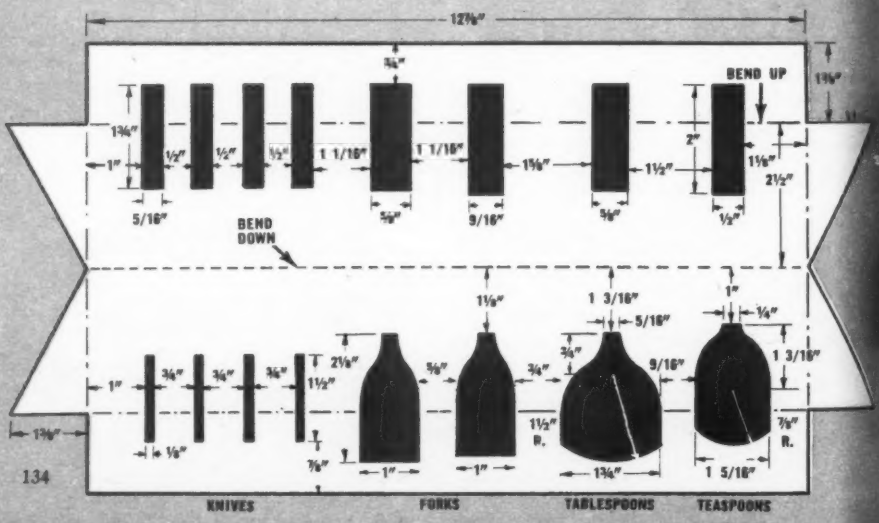
SILVERWARE ORGANIZER

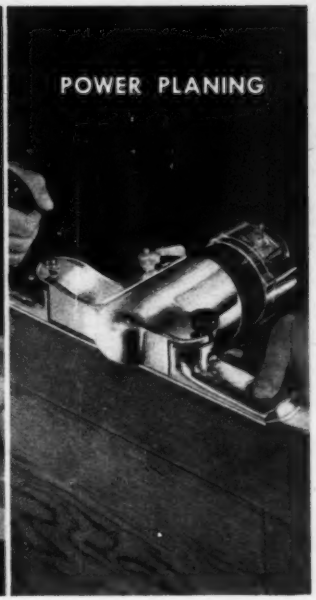
SERVICE for four fits in rack; height and length can be increased to hold more.

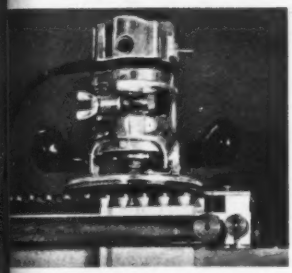
THIS simple rack keeps your silverware neatly arranged in a drawer and practically eliminates the scratching that occurs when the pieces are just dropped into rectangular compartments. The one illustrated was made from half of a 12¾x5-inch smooth cardboard box and will hold knives, forks, teaspoons and tablespoons for four. However, it can be made to hold a service for eight or more just by increasing the dimensions.

The cardboard stands up well but ⅛-inch plywood, painted or stained and varnished, will make a really durable rack. •

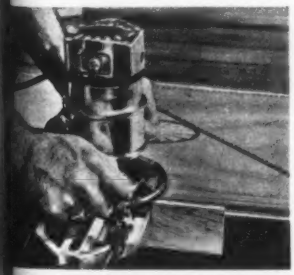








DRAWERS *Dovetail Attachment* makes it easy to build beautifully fitting, professional quality drawers. And those "natural grip" handles give you complete control.



INLAID TABLES, TRAYS *You can* turn out jobs like these with a professionally crafted look; yet they're duck soup with a B&D Router and inlay strips.

Bet you didn't know B&D Routers are so versatile ...and so easy to use!

A Black & Decker ¾ HP Heavy-Duty Router makes it so easy, it makes you an expert! You'll turn out furniture, inlaid tables and trays, decorative what-not shelves, cabinets, paneling, special molding and lots more. You'll make professional cuts—produce professional-looking projects—with amateur ease.

To start with a Router is almost a woodworking shop in itself. And Black & Decker has added *special* features designed to help the beginner. Check the projects and features on this page. Then try a B&D Router in a choice of Routing and Planing Kits, at your dealer's next chance you get. You won't want to put it down!

50th YEAR

For 40-page Router manual (a 50c value!) send only 25c in coin to: THE BLACK & DECKER MFG. CO., Dept. F-080, Towson 4, Md.

See "Tools-Electric" -Yellow Pages- for Service & Sales

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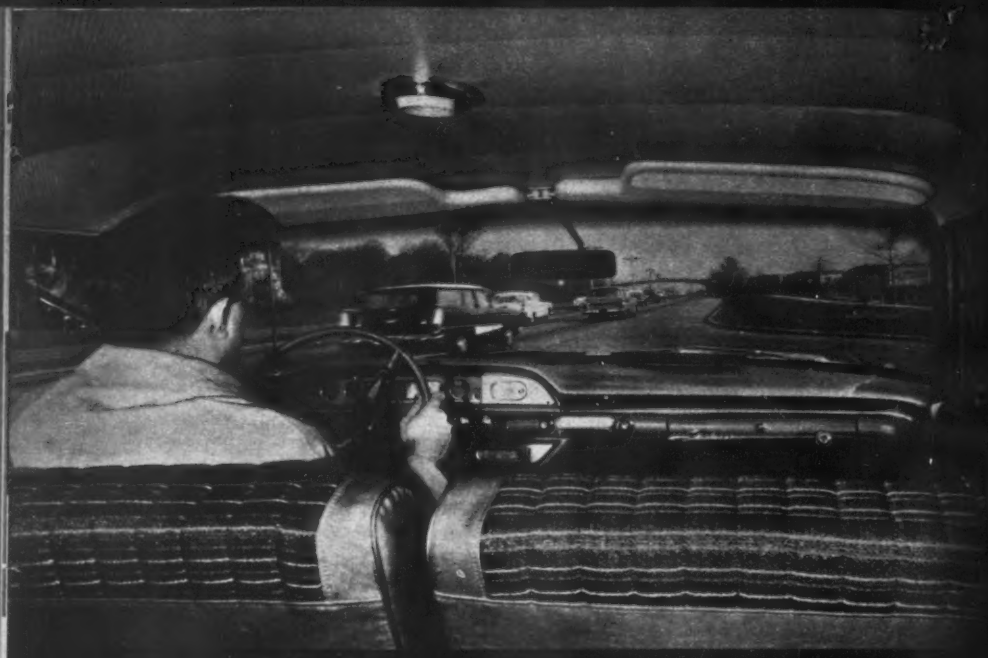
QUALITY POWER TOOLS



YOUR NEW FORD

Get the most out of your 1960 Ford by paying careful attention to some simple requirements.

By Frederick C. Russell
Member, Society of Automotive Engineers

CAR CARE

ONE of the highlights of the current output from the Ford factory is a program of extended life for familiar car parts. Mufflers, for example, have aluminum-coated walls and heads plus a double-thick inner casing and asbestos insulation. These help slow down condensation, reducing corrosion. Instead of a 54-plate battery, these cars come through with a 66-plate job. Less cooling trouble is the result of Ford's cross-flow radiator, coolant being directed horizontally. To top it off, waxing really isn't needed on the finish the cars get.

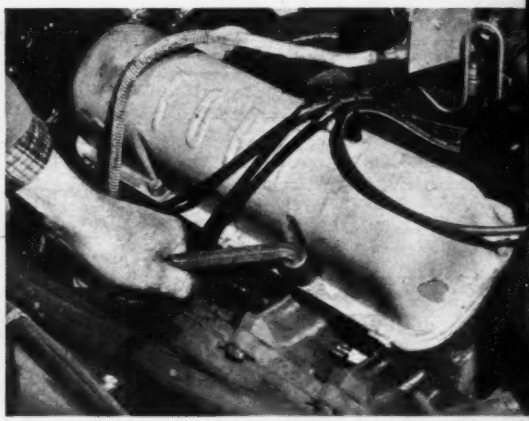
By following a simple but practical guide, any Ford owner can assure himself the sort of maintenance and lubrication that will stop trouble in its tracks. Included in a special 6,000-mile check are such matters as adjusting steering gear pre-load and clutch pedal free travel. At this point there should be lubrication of rubber weather strips, door lock rotors, fuel filler door hinge pivots and cleaning of door drain holes.

Special trouble-prevention care is suggested by Ford at the 12,000-mile point. Here bands and linkage for the Cruise-O-Matic transmission should be adjusted, window and front seat regulators should be lubricated and front wheel bearings should be cleaned, repacked and adjusted. A minor motor tune-up is recommended every 6,000 miles; a major one every 12,000 miles. A major brake adjustment at 12,000 miles

ADD lube to steering gear until it comes out of lowest bolt hole in housing cover.

IF FREE, the exhaust gas control valve opens when accelerating during a warm-up.

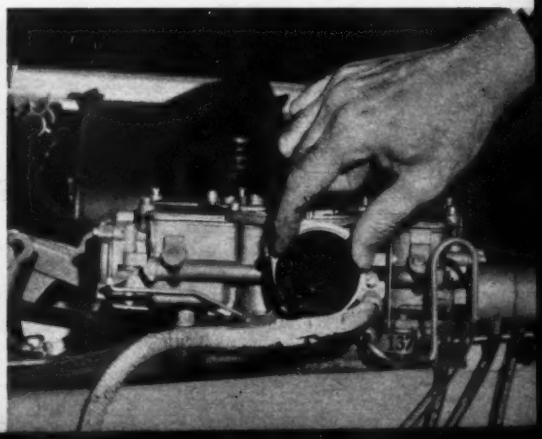
INSPECT speedometer cable every 12,000 miles for kinks or wear and apply grease.

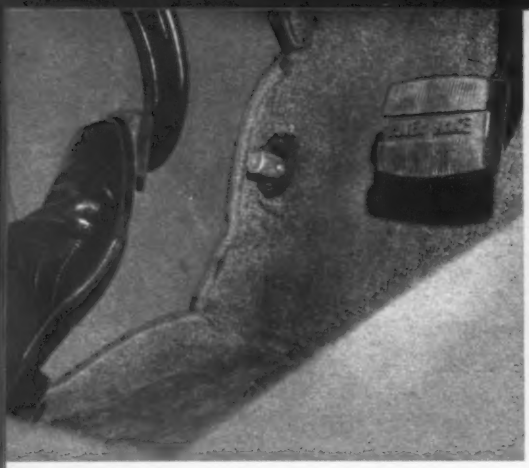


VALVE COVERS now have hold-down bolts around rim to lessen buckling possibility.

FUSE PANEL is under the dash, directly below light switches and circuit breaker.

INITIAL setting of three digits lean is used on the choke thermostatic spring housing.





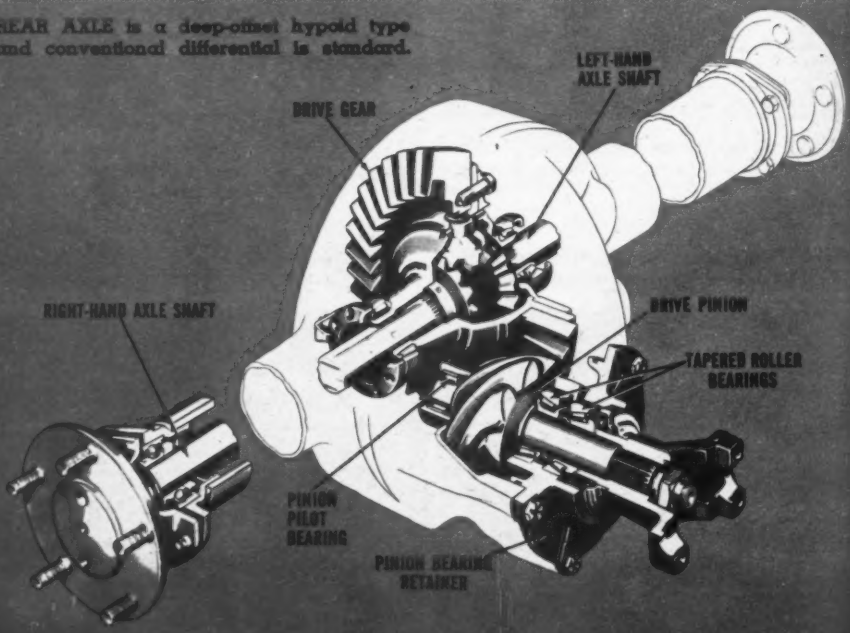
PARKING BRAKE cables probably need adjustment if there is looseness in pedal.

TIGHTEN all hose connections periodically to prevent loss of the engine coolant.

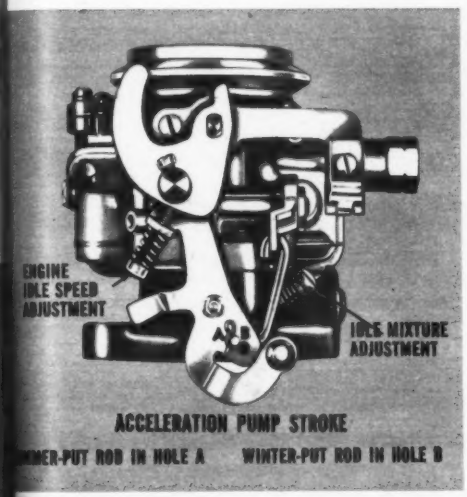
will also pay dividends in extra safety.

Around 24,000 miles, or about every two years, your '60 Ford will benefit by additional attention likely to be overlooked. There's the slip yoke on the drive line of cars with automatic transmissions. This will need lube. So will the speedometer cable, the heater and air control, and the motor for this accessory, the windshield washer control and the universal joints. At this mileage replace spring leaf inserts to keep the car riding softly. Also include a check on the rear spring eye bushings as well as the shock absorber bushings. I like the idea of checking the carburetor throttle

REAR AXLE is a deep-offset hypoid type and conventional differential is standard.



BRAKE FLUID level should be checked on occasion; if too low, it can be dangerous.



IDLING and acceleration pump adjustment points on Holley single-barrel carburetor.

for wear and also tightening the rear axle U-bolts if necessary.

In doing a simple job such as removing the spark plugs wires, do not pull on the wires. Instead, grasp the molded cap only. High tension wires on these cars are the radio-resistant type. However, the resistance of each wire should not exceed 24,500 ohms. And when checking such resistance, or when setting ignition timing, do not puncture the wires with a probe. This would cause separa- [*Continued on page* 147]

SERVICE TIPS

from Detroit

Beginning with passenger car serial 60V-30000, Studebaker-Packard will use Champion Spark Plugs, Model H-14Y in their 1960 V Model passenger cars. These plugs incorporate the non-fouling characteristics of the H-18Y spark plug and also cut down pre-ignition at sustained higher engine speeds.

Transmission-locking in the Park position on 1960 Valiants with three-speed automatic transmissions can be caused by improper cable adjustment, or by the cable end not being engaged in the spring clip of the cable adapter. To make sure the nose of the cable is engaging the spring clip in the adapter, pull and push the cable assembly several times—with the cable lock set-screw loosened—to check that it is securely locked.

Don't try and replace your Falcon's carburetor with Ford's standard six-cylinder carburetor. True, the latter's base fits the Falcon manifold, but its installation will adversely affect your car's engine performance and economy.

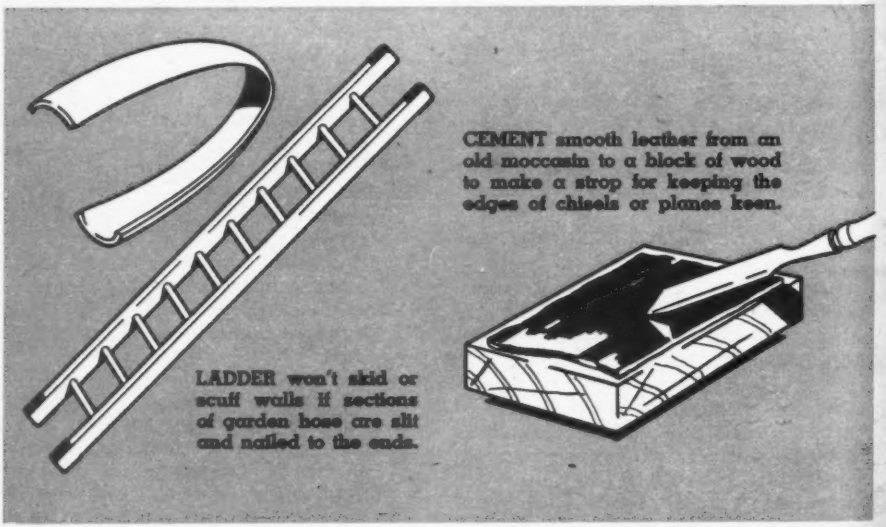
Insufficient air space between the generator wiring and the intake manifold on the 1960 Plymouth 318 cu. in. engine can short out the wiring and cause damage to the generator and regulator. The two clips that retain the generator wiring near the choke housing must be in an upright position to keep the wiring approximately a half-inch above the engine's intake manifold.

When replacing the fan guard on your 1960 Ford's radiator, use only the specified 5/16-18x½-inch sheet metal drive screw (39883-S7). A longer screw may bottom and cause damage.

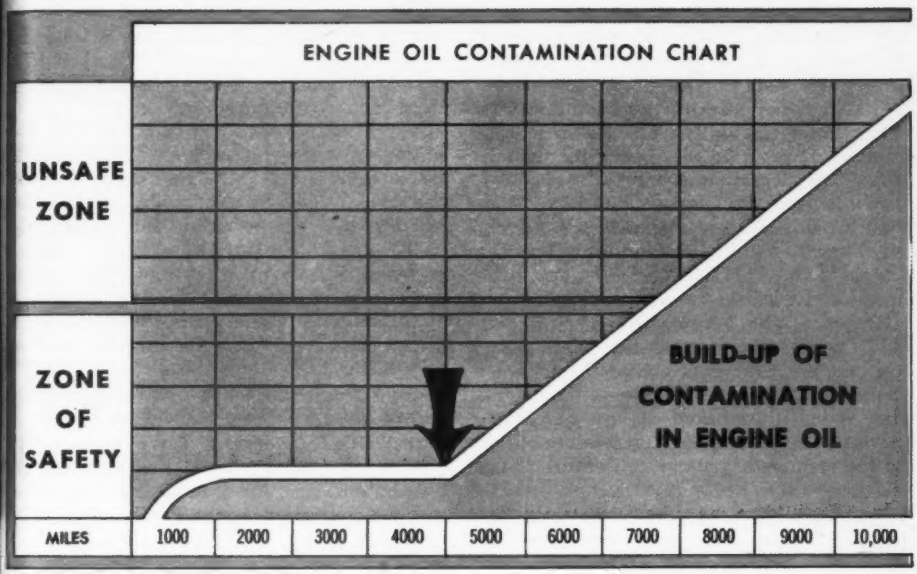
SHOP SHORTS

WHEN GLUING irregular work, moisten heavy cord and tie pieces tightly. On drying, cord shrinks and applies pressure for a good bond.

DOOR KNOB with setscrew makes good grip for a screw driver, reamer, drill or nut socket. Just grind shank to fit.



Look what happens when you forget to change your oil filter!



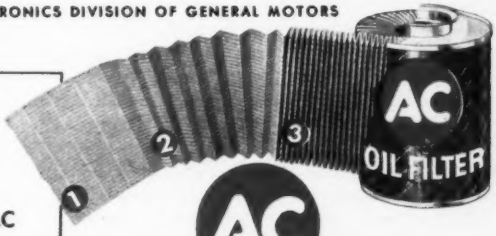
The oil filter in your car operates like a trap. It catches and holds dirt, dust and other contaminants that get in your oil. It's designed to hold the contaminants that collect in 5,000 miles of normal driving. The chart above shows you what happens when you forget to change your filter. As you can see, the filter fills up and stops working. Dirty oil bypasses the filter and goes back into the engine where contaminants build up — fast. Be sure to replace your filter at 5,000 miles. When you do, be sure to get the best. Insist on an AC Triple-Trapper.

AC SPARK PLUG ✿ THE ELECTRONICS DIVISION OF GENERAL MOTORS

Get the finest engine protection money can buy

When you change your filter, get an AC Triple-Trapper Oil Filter. It gives you:

1 **Stronger filtering material**
2 **More usable filtering area**
3 **Greater filtering capacity**



AC

TRIPLE•TRAPPER OIL FILTER

Driveway Light

[*Continued from page* 122]

As RY-1 latches in when the photocell responds to the headlight beam the charging circuit is broken. At this instant C4 begins to discharge through R6, the 10-megohm resistor. The discharge process is very slow because C4 has a high capacitance and R6 is a large value of resistance. As the discharge occurs, however, the grid of the amplifier loses its negative potential very slowly. Finally, as the grid approaches its own cathode potential, the amplifier draws plate current, pulls in RY-2, disconnecting the cathode of the rectifier from the line. Almost instantly RY-1 drops out. This turns off the floodlights and the heater of the 117L7/M7GT, restoring the circuit to its initial "ready" condition.

How does the "skywatching" photocell, PC-2, work? By tracing the connections you can see that it is connected directly across the grid and cathode of the thyratron. When illuminated, its low resistance prevents the other photocell from developing the required "trigger" potential on the grid and thus keeps the system deactivated. Nighttime sensitivity is controlled by the setting of R5; once this potentiometer is adjusted for your particular driveway and car, it need never be touched again.

Construction. You will find the commercial-type metal cabinet with built-in chassis ideally suited for this project (see parts list). Five items appear *above* the chassis: RY-1, RY-2, the seven-pin miniature socket for the 5823 thyratron, the octal socket for the 117L7/M7GT, and the sensitivity control, R5, which is mounted about two-thirds of the way up the front panel. All the small parts, such as resistors, capacitors, On-Off switch, and the selenium rectifier, SR, are mounted beneath the chassis. Liberal use is made of terminal strips to hold these parts securely in place. Appearing on the right side of the case, near the bottom, is the output socket SO-1, the input octal socket SO-2, and the emerging AC line cord and plug.

There is nothing critical about the layout or wiring. However, the following standard precautions must be observed:

(1) Neither chassis nor case forms a part of the electrical circuit. *No connection of any kind is to be made to these metal parts.* They serve merely as support and housing.

(2) There are three polarized capacitors, C1, C3, and C4. *This polarity must be precisely observed.* The capacitors are clearly marked to distinguish the + and − leads.

(3) The selenium rectifier (SR) is also polarized and *must* be connected as shown in the schematic diagram.

(4) The numbering of pins for both the miniature seven-pin socket (5823) and the two octal sockets (SO-2 and the socket for the 117L7/M7GT) are given, as customary, for the *bottom* view. The numbering of the pins for the plug PL-2 is given for an end-on view so that they match the numbers on SO-2.

(5) Resistors, relay coils, C2, and both photocells are *not* polarized so that no precautions need be taken here.

(6) Crimp all wires around terminals before soldering and avoid cold solder joints.

When the wiring is finished, inspect all connections and leads to detect any short circuits that might exist. As a preliminary test, plug in the electronic control, turn the switch to On, then look for overheating parts. With the photocells still unconnected, neither relay should operate, nor should the filament of the 117L7 M7GT show any sign of heating.

Photocell assembly. Both photocells are housed in the same case, one facing in the direction of the oncoming car and the other toward the sky. The headlight sensor is protected by a one-inch pilot-type jeweled bull's-eye. An ordinary bottle cork is fitted to the bull's-eye case and the leads of PC-1 are pushed through the cork so that the photocell is self-supporting. The cork is then inserted in the bull's-eye case to make a rigid sealed assembly.

An open-frame, half-inch pilot light is used for the "skywatcher" cell, PC-2. The pilot-light socket is hack-sawed off and a small piece of perforated Bakelite is screwed on the outside of the frame in its place. Two flea clips pushed through the Bakelite then serve as supports for the wire leads of PC-2.

Although the one-inch jewel may be almost any color but blue, the window for

PC-2 must be clear. The reason for this is as follows: the CL-3 type of photocell is very sensitive in the red region of the spectrum and, since your headlights are rich in red content, a red or amber glass will still permit more than enough light to get through to the photocell. On the other hand, there is little red light coming from the sky. As it is, the intensity of the blue light is more than sufficient to operate the "skywatcher" cell but it should not be cut down by a colored filter of any kind.

A three-wire, vinyl enclosed cable is used to connect the photocell assembly to the electronic control section. One end of the cable enters the photocell housing via a grommeted hole in the bottom; the other end of the cable terminates at pins 2, 4, and 7 of an octal plug that matches the octal socket on the electronic control case.

Testing and installation. The completed assembly should be tested on the workbench before installation as follows:

Plug the cable from the photocell case into the matching socket on the electronic unit. Place the photocell case so that an overhead light can illuminate the "skywatcher." Using a bright flashlight to simulate the headlights, turn on a power to the electronic control and flash the light on the headlight sensor. There should be no action at all. Now cover the "skywatcher" so that light cannot reach it and insert the plug of a floor lamp into SO-1. Place the lamp so that its light cannot reach either of the photocells when it comes on. With R5 set to minimum sensitivity, shine the flashlight into PC-1 and slowly run R5 toward greater sensitivity. At some point in its setting the floor lamp should go on; if the flashlight is removed within 15 seconds, the lamp should go out. Now keep the headlight cell illuminated for 30 seconds and then remove the flashlight. The lamp should remain aglow for a period of at least five minutes and then extinguish automatically. When this action re-cycles reliably the equipment is ready for installation.

The photocell assembly may be mounted anywhere so long as one of the headlight beams can reach PC-1 and there is nothing to prevent PC-2 from "looking" at the sky. The electronic control case should be hung from the wall of the garage near an electric outlet. Mount an outdoor, weatherproof floodlight (obtainable in electrical supply stores) on the outside wall of the garage where it will do the most good. Insert PL-2 into SO-2 and the floodlight plug into SO-1. Plug the electronic control line cord into the AC outlet in the garage. Adjust the sensitivity control for your headlight intensity. Make a timing test several times to be sure that the system works reliably, then forget it. From this point on, you have a silent sentinel at your beck and call at any time you want it. •

PARTS LIST

Electronic parts:

C1	8 mfd, 150 V electrolytic capacitor, miniature (Sprague TVA-1405)
C2	500 mfd disc capacitor, 150 V or more (Centralab)
C3	12 mfd, 150 V electrolytic capacitor (Sprague TE-1508)
C4	Same as C3
PL-1	117 V AC line cord and plug
PL-2	Octal plug (Amphenol 86-Pm8)
PC-1	Clairex CL-3 photocell
PC-2	Clairex CL-3 photocell
R1	22 ohms, ½ watt
R2	220K ohms, ½ watt
R3	4700 ohms, ½ watt
R4	500 ohms, 1 watt
R5	3 megohm linear potentiometer (IRC Q11-140)
R6	10 megohm, ½ watt
RY-1	5000 ohm sensitive relay, SPDT (Potter & Brumfield type LB-5, specify 5000-ohm coil)
RY-2	Same as RY-1
SO-1	AC chassis mounting receptacle (Cinch 2R2)
SO-2	Octal socket, chassis mounting
SR	Selenium rectifier, type D5414, International Rectifier Corp.
SW	SPST toggle switch
V1	Tube, type 5823 cold cathode thyratron
V2	Tube, type 117L7/M7GT rectifier-beam power tube.

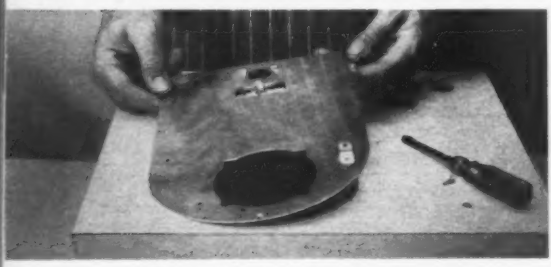
Miscellaneous parts:

1	Octal socket for 117L7/M7GT
1	Miniature 7-prong socket for 5823
1	Three-wire, vinyl-cased cable (Belden type 8443)
1	1-inch pilot-light assembly for mounting PC-1
1	½-inch pilot-light assembly, open frame, for mounting PC-2
1	Cork for 1-inch assembly
1	Small piece of perforated Bakelite
2	Flea clips for mounting PC-2 on Bakelite
1	Electronic control case, steel with built-in chassis, black crackle finish, 4"x5"x6" (Bud type C-1796)
1	Photocell assembly housing, aluminum Minibox, 2¼"x2¼"x4" (Bud type CU-2103)
1	Length of scrap aluminum for mounting photocell assembly to garage door frame.

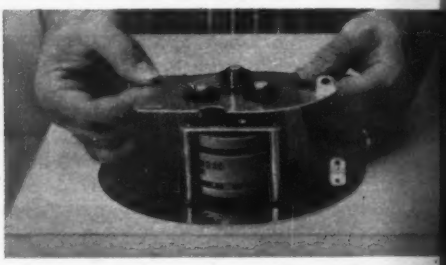
HI-FI TURNTABLE

1. A screwdriver and 30 minutes is all you need to assemble a hi-fi turntable.*

2. This is what the package looks like for $50; comparable assembled job is $70.



4. Base can be purchased or use template supplied for cutting an opening for motor.



5. After assembling the motor to its frame, it is lowered in position as shown above.

7. The turntable shaft rides on the ball bearing shown being dropped into its well.

8. Next step is to lower turntable shaft into the partially oil-filled well of motor housing.

*Rek-O-Kut Co., Corona 68, N.

LE

oks like
is $70.

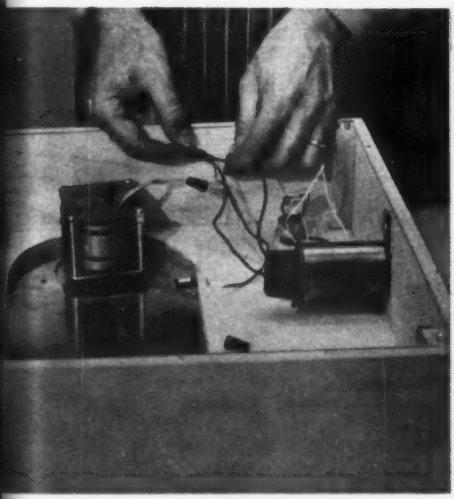
s frame,
above.

haft into
housing.

es, N. Y.

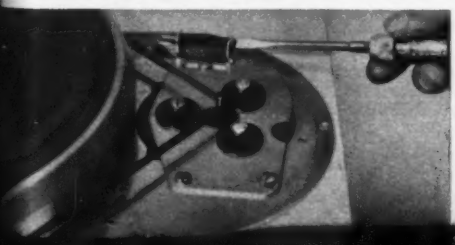
KIT

3. The parts laid out before start of assembly. A pickup arm is not part of the kit.



6. Bottom view. Motor capacitor is at right. Wire nuts are used for making connections.

9. Final step. Belt is adjusted for least amount of tension necessary for traction.



Music When You Want It

[*Continued from page* 114]

inch from back, one inch from right end. **Control knob holes** (2): approximately ⅜-inch diameter, 1⅞ inches apart; right hole 2⅝ inches from right end. **Turntable shaft:** at least 11½ inches from right end. **Hole for pickup wire:** locate by placing a 12-inch record on the turntable, setting the pickup arm about one inch away from right edge of record and penciling in the screw holes.

Drill a ⅜-inch hole halfway between the screw-hole marks for the pickup wire. The amplifier vent hole should be about two inches in diameter. When you are sure everything fits, trace the cutouts onto the quarter-inch plywood panel, cut out the holes and sand the edges.

Assembly. With a small bolt and nut mount the amplifier through the hole between the control knobs. Attach the transformer with short screws, soldering the red and blue wires to the amplifier. Now mount the motor with four wood screws, soldering one lead to lug No. 7 (35Z5GT) and the other to the amplifier chassis.

With the motor in position, slip the turntable onto its shaft again, taking care not to damage the drive wheel. About a half-inch from the top of the shaft is a small groove; by slipping a small wire clip into this groove the turntable will be prevented from slipping off its shaft when the player is being carried.

Next install the pickup arm and rest, soldering one lead to the volume control lug and the other to the chassis. Fasten the speaker over the grille cloth and screen wire before the leads from the transformer are soldered to it.

The grille cloth can be cut from any loose-weave fabric; a piece of ordinary screen wire, cemented and screwed to the panel, supports it. Screening is also tacked behind the vent hole. At this point, with the speed lever at either extreme position, locate and attach the speed dial with small roundhead screws.

With reasonable care this phonograph will last a decade. However, if yours of the dozen-plus years expects to tote this tune spinner to future Scrimmage Line Rocks, better make him (or her) a set of bongos instead. •

Lawn Furniture

[*Continued from page* 107]

READY FOR RAIN. Three-piece lawn set with weatherproof covers described in text.

shank, has been left open with about a quarter-inch space. Screw these eyes at three-inch intervals along the frame of your settee or chair.

Get a 100-foot hank of colored nylon clothes line (the Puritan Cordage Company, Louisville 6, Ky. makes it in a variety of colors). Knot one end and start weaving the cord back and forth between the screw eyes. Remove as much slack as you can. However, it need not be absolutely tight. The last strand of the cord is merely stapled to one side of the frame. If you find you have too much slack in the cord, you can take up some of it by turning the screw eyes into the wood a couple of turns. There is no need to close the opening in the screw eye as it is much too "deep" to allow the cord to slip out.

The next step is staining and refinishing. All outdoor furniture takes a terrific beating from the sun. To counteract this, Breinig Brothers, a manufacturer of paints and varnishes, has especially compounded a stain, Breicraft, which is designed not only to enrich the inherent color of redwood but also to prevent the ultra-violet rays of the sun from affecting the color.

Apply the redwood stain and allow it to dry for 24 hours. Next, follow with two coats of Durable Woods Exterior Finish. This is a clear transparent coating especially designed for redwood, cedar and cypress. However, when applying it on redwood, add one part of the stain to eight parts of the exterior finish. Sandpaper after it has dried for at least 24 hours. The second coat can be applied as it comes from the can without the addition of the stain.

To make the covers for the furniture, a remarkably weatherproof and highly tear-resistant fabric called Weblon was chosen. This material is a lamination of two vinyl films with an especially strong synthetic fabric between them. It is light in weight, weather-proof and sufficiently pliable for easy sewing.

The covers are loose fitting and of simple design. They can be cut to shape by laying the pieces on their respective sides and cutting with a scissors. Allow at least four-inch margins beyond the outline of the furniture. Sew the seams together on the wrong side and then turn the covers inside out so that the stitching is not visible. •

New Garden Spray

[*Continued from page* 123]

grass and chickweed and similar pests.

The heart of the system is a series of three inter-changeable nozzles, each of which is designed to apply a pre-determined number of gallons of finished spray mixture. The ten-gallon nozzle is used to spray chlordane, plant food and weed killers; the five-gallon nozzle is used for insecticides and fungicides, while the two-gallon nozzle sprays dormant oil and floral dust. •

Golden Hammer Awards

[*Continued from page* 126]

Leonhardt, Sheboygan, Wis. . . John R. Harvath, Mineola, Tex. . . Dr. W. B. Southard, Frederic, Wis.

The following craftsmen have been awarded CERTIFICATES OF MERIT for their projects:

E. S. Cook, Jr., Atlanta, Ga. . . Anthony De Crescenzo, Brooklyn, N. Y. . . Al Bandel, Rexford, Kan. . . John N. Denk, Baltimore, Md. . . A. R. Regan, Houston, Tex. . . Albert E. Helland, Chicago, Ill. . . Rodney S. Gray, East Point, Ga. . . Wm. A. Hagedorn, Columbus, Ohio . . . Carl Murphy, Garland, N. C. . . Philip Bloom, Cincinnati, Ohio . . . George Robb, Cincinnati, Ohio . . . Leonard C. Dietsch, Shoreview, Minn. . . C. Earl Bryant, Ann Arbor, Mich. . . Bud Stenzel, Lockport, N. Y.

Look for names of more winners next month.

EVENING PROJECT

PEG-BOARD WALL

Perforated panels are the ticket for a boy's room. But have you ever tried mounting them with the recommended spacer-washers? Trying to spot them around the wall and then position the 4x8 panel is tricky. A better method is to screw 1x2-in. furring strips to the wall (use Molly bolts or toggles). Mount panel to strips with round head screws.

Your New Ford

[*Continued from page* 139]

tion in the conductor.

There is a difference between the distributors used on the Six and the V8 models. The Six carries the Loadomatic distributor which is regulated entirely for advance by vacuum from the carburetor. The Dual Advance distributors on the V8 models carry a governor-controlled centrifugal advance mechanism as well as a vacuum-operated control. The new distributor for the V8's uses a pivot-point breaker plate instead of the ball-bearing type. Vacuum advance can be increased or decreased by use of washers between the vacuum coupling and the spring. For the vacuum advance, use an engine speed of 1,000 rpm.

Many are critical of Ford's recommendation of a 4,000-mile engine oil change since this tends to blind some owners to the fact that too limited use of the car, especially in winter, may foul the engine with diluents unless oil is changed as often as every 1,000 miles. Ford's 145-hp Mileage Maker Six takes only four quarts of oil anyway; the V8 only five. This can be multi-viscosity oil if it is certified for Service MS. Otherwise use SAE 30 above 90°F, 20 or 20W in the 20° to 90° range and 10W in the real nippy range. Don't add oil until the level drops to the Add Oil mark and don't go above Full.

To obtain better service from the new Ford, make sure that you follow the rules when you give it the required attention. A good example concerns replacing the spring leaf inserts. When prying the leaves apart, be sure they are dry and free of oil. In checking the brakes, remember that the lining should be replaced if it is worn to a thickness of less than 1/30-inch above the top of the rivets. In applying Ford special lube to the splines of the slip yoke, check to see if the rubber bellows-type seal on

GAME SPOTTER

ON TARGET! Each man views game that has been sighted by man holding game spotter.

SUCCESSFULLY used by hunters in the Yukon Territory, this sighting device permits one hunter to pinpoint game for his partner without the necessity of talk or pointing movements that might frighten an animal away. The handyman-hunter can make his own game spotter in an hour or two by following the diagram.—*M. E. Alford*

BRASS FITTINGS on hardwood spotter mustn't reflect light. A leather belt sheath makes a handy carrier for this device.

Your New Ford

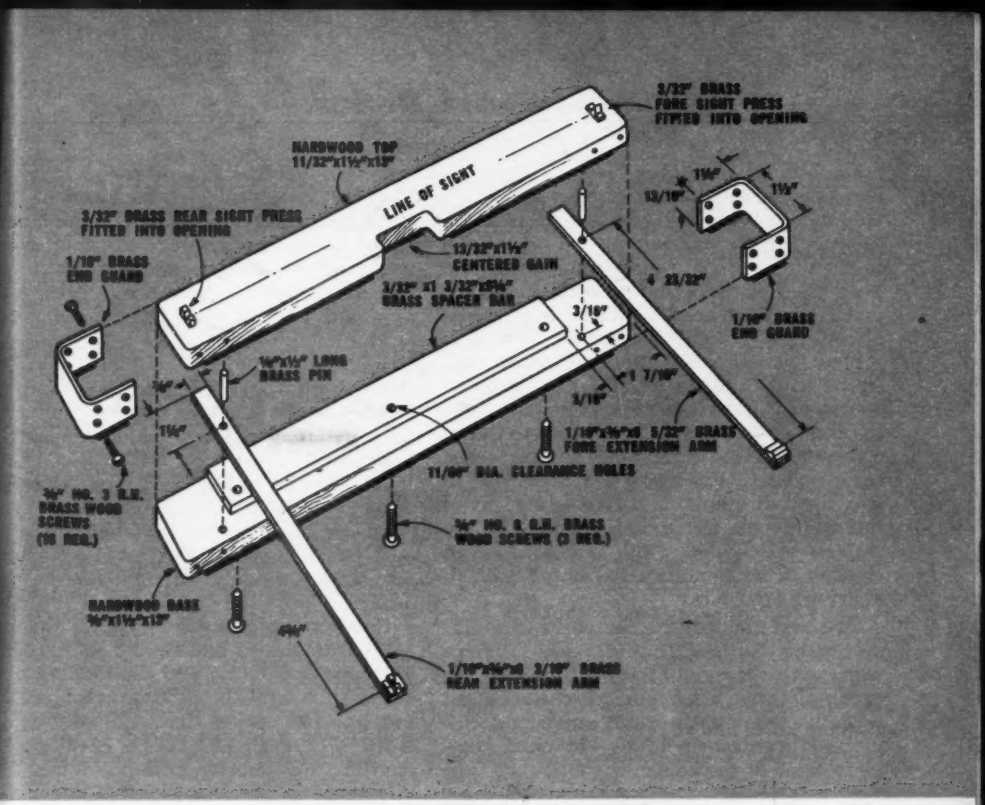
the end of the transmission extension housing needs replacing.

Ford's efforts to help you get full value and economy from whatever model you select is seen in the realm of the exhaust system, too. This year the mufflers are placed way to the rear. Since there is more condensation at this point, Ford uses the better mufflers already mentioned. What may be less obvious is the fact that the exhaust pipes are now longer. Alignment is important if exhaust pipe vibration and looseness are to be avoided.

To help the exhaust system perk properly, check periodically for leaks or holes. These usually can be detected when the car is on a lift, but a whistling noise when the engine runs is another guide. Each muffler has a slot at its inlet pipe. This should be blocked by the inlet pipe (exhaust pipe) but the overlap should not be greater than 1¾ inches. Vibration in the single or dual exhaust systems of the 1960 Fords is usually the result of a broken or misaligned clamp.

The Sunliner V8 models have a small resonator in the left side about in line with the transmission. The exhaust manifold heat valve for the Six differs from the one for the V8. The former is integral with the exhaust manifold; the latter is in between the right exhaust manifold and the inlet pipe to the right muffler. Keep the shaft of these valves lubed with penetrating oil. Replacement is a needless expense.

If you do not use the new permanent anti-freezes such as Dowguard or DuPont's Telar, and flushing of the cooling system is necessary, be sure to remove the thermostat before doing the job. In addition to the radiator drain, the Six has one drain cock located at the left rear of its block. The 292 cubic inch V8 motor has drain cocks on both sides of the lower block, while the 352 cubic inch V8 motor has drain plugs.



Your New Ford

Since it is hard to get at the drains of V8 engines, you can clear the system by draining at the radiator several times. Also, if the car is headed down a slanted driveway, a draining at the radiator will empty most of the cooling system. Repeating the job, after refilling and running the engine a few minutes, will usually get rid of almost all the old coolant or anti-freeze. If you use rust inhibitor religiously, the system will not need draining to remove scale except in areas where water is extremely hard.

A chief source of low performance and fuel waste is an engine that fails to reach normal operating temperature. Here the trouble may be an ailing motor thermostat or one with too low a rating. Sometimes the heat gauge will indicate normal temperature when the engine is actually running too cool. Warm-up efficiency is also dependent on the manifold heat control valve. Incidentally, if you change thermostats be sure to note that the water outlet elbow gasket must be positioned on the cylinder head before the stat is installed.

The 1960 Fordomatic transmission is a two-forward-speed job, the lower speed providing excellent engine compression braking for downhill driving. The Cruise-O-Matic is a three-forward-speed job with a choice of two Drive positions. On one the car starts in true Low while in the other the start is in Second which provides economy in cases of light load and slow, level starting.

Fords with the automatics have a dashpot control to prevent stalling from sudden closing of the throttle. Like the throttle linkage this will need occasional checking. Ditto for the manual linkage so that the manual valve is positioned for proper direction of fluid pressure to the transmission parts.

Stick shift jobs call for checking clutch pedal travel. Ford engineers stress that incorrect adjustment of the clutch pedal is a common cause not only of clutch failure but of transmission ills as well. •

[*Continued from page* 81]

automatic as breathing when you walk. Once you've accomplished this you're halfway home to better swimming. In such practice, teach yourself to use your neck to turn your head, rather than lifting the head itself or dropping the opposite shoulder. Keep your head, as much as possible, always in a straight line with your body.

Now comes coordination with your kick. In the crawl, the best thing for the average swimmer is the six-beat count: that is, six up-and-down kicks with the feet to every complete stroke completed by the arms, right and left. Practice your breathing to this six-beat count: inhaling—face out of the water—on 1-2; exhaling—face in the water—on 3-4-5-6. The smooth, even rhythm to be established is one breath to every six leg beats.

The best kick for the recreational swimmer is the "flutter." In this you kick downward with your right leg, with the left leg rising slightly. Then you kick downward with the left leg, the right one rising. Six kicks—three by each leg—to each complete cycle of the arms.

Now you time your breathing with your arm stroke. Say your head is turned to the left, so that the mouth is in the open, inhaling. The left then should be pulled back, in the recovery position. The right arm is ahead, making the stroke. As the head turns back into the water, to exhale, the left arm goes ahead for the stroke, the right arm swings back for the recovery. Swimmers can turn their heads either to the left or right for inhaling, whichever is most natural.

To try out your arm stroke, hold on to the side of the pool with one hand. You're in the water, face down. Stretch one arm beyond your head in line with your eyes and let it drop into the water four to six inches. Keep your fingers closed and your hand slightly cupped. Bring your arm back through the water firmly, forming an arc. This is best accomplished by keeping the arm making the stroke slightly bent.

Continuing this arc movement, lift the forearm out of the water, elbow high. Let your hand go limp as it leaves the water. Keep it close to your side. Push the arm forward, letting the hand and forearm reenter the water with your elbow still high. For the best "pull" let the palm of your hand be turned outward. Once the hand is in the water, though, turn the palm downward and continue on with the stroke. You can practice this movement, trying each arm individually, then alternating.

The thing to remember is that one arm is in recovery while the other is pulling through the water. Let your shoulders and elbows do the work of moving your arms forward. This allows the lower part of your arm to relax.

Coordinate your breathing exercises with your arm movements. Turn your head and inhale on 1-2, exhale in the water on 3-4-5-6. As you do this, make a complete arm stroke, the left arm on 1-2-3, the right arm on 4-5-6.

Now you practice everything together—breathing, arm stroke and kick. Stroke with one arm while you are kicking three times, then with the other arm while kicking another three times. Steady is the word. There should be no break in the rhythm. Incidentally, more kicks won't get you there faster. Six kicks to one breath cycle and one complete stroke of the arms. That's the rhythm.

Having done all these—and you can't learn them properly overnight—you have control, coordination and rhythm. With these three things mastered you should also be relaxed.

Okay! You're ready to start swimming—swimming *better,* that is.

Don't try too hard at first. Just relax and let yourself go. If you've really mastered the fundamental practices while clutching the side of the pool, you'll find that full coordination of your kick, your breathing and your arm movements will come along naturally with more time and practice. In the actual swimming, for best results try and keep your body high in the water. You can do this by keeping your kick strong. Keep your hips down by arching your back slightly. Shoulders should always be straight and a little bit out of the water when you take your arm stroke.

A good rule-of-thumb is to keep the water line about the middle of your forehead. Your body should remain as horizon-

al as possible. Your head should be kept n line with your spine. Your aim always s smoothness. With coordination and hythm, you don't waste so much effort. You're not fighting yourself. You'll be surprised how this will enable you to swim urther. Don't worry about your speed. n recreational swimming it isn't important.

Watch that breathing all the time. Keep practicing it. It's the key to everything. And when you're breathing, don't take a bite of the air. Take a deep breath. That way you get more oxygen.

If you go beyond these fundamentals you are stepping out of the swim-just-for-fun-and-relaxation class and getting into the competitive brackets. For the average swimmer who gets into the water two or three times a week to give muscles a healthful workout, competition swimming is unnecessary.

Practice. Keep everything simple. Don't try to do everything at once. Learn to relax and coordinate. Don't aspire to any records. *Practice.*

Do these things and you'll be a better swimmer—for sure! •

Tips For Campers

[*Continued from page* 77]

of tent to buy and how to pitch it.

Station wagons are practical vehicles to use for camping trips. If you don't have one, I suggest you rent one for the trip. Or you might buy an old one, as I did, and rebuild it, new engine and all for under $1,000. If you use it just for camping, fishing and outdoor work, it will last for years.

The week before you start, have your car completely overhauled and tuned up. Replace worn tires. A very important step is properly packing your station wagon or car before you start.

First, take your spare tire, bumper jack, lug wrench and road flares out of their regular place. On my wagon, they rest in a depression under the rear deck. Store here all items that you won't have to use while traveling. When everything else is packed, store your spare, wrench, jack and flares in a box in an easy-to-reach spot. Add a pair of sturdy wooden chocks for parking on hills.

Make a box of plywood that will serve as an arm rest and hold cameras, film, road maps, a large thermos of water, cups and anything else that might be used frequently on the trip.

If you have children and a dog along, you'll want to keep the second seat in your wagon for them. Directly behind, store a large ice refrigerator. I use one of the new Thermaster aluminum chests, fiber glass-insulated, size 22½x13x16½ inches. Filled with dry ice, you can bring fish fillets home safely for the freezer even when this means driving several days. On one side of the chest pack your tent, camp chairs, sleeping bags and other heavy, bulky equipment. With the weight there, the wagon will roll more comfortably and the ice box will be handy from the front seat, for food and cold drinks.

Make a small, compact portable kitchen of plywood, one that will hold a three-burner gasoline or bottled gas stove, pots and pans, small fire extinguisher, camp ax, lantern, cleaning tools, towels, steel wool pads, wash and dish cloths, soap and other essentials. Keep this kitchen box handy so you can cook a quick roadside meal without unpacking the whole car.

Ice and water are going to be a major problem. With the popularity of electric refrigeration, the demand for ice has dwindled to where it is all but impossible to get in some areas. Whenever you can do it, stock up to capacity. Cruising across desert country can become serious unless you plan far ahead for ice and water. A good idea is to carry eight to 12 waxed milk cartons. Fill three-quarters with water at each motel and have the proprietor put them in the deep freeze overnight for you. Then you'll have ice—or water when the contents melt.

Two things you'll find very helpful. One is a car compass; the second is an outside mirror which allows you to pack the wagon to the roof (which blocks your inside mirror). Load sensibly. If necessary, install overload springs before you pack and use heavy-duty tires.

Clothing should be packed in lightweight fiber foot lockers made as waterproof as possible with canoe paint. Rain gear, overcoats (even in mid-summer),

[*Continued on next page*]

jackets, sweaters and overshoes should be carried in plastic bags and packed where they can be reached quickly. Fishing gear should be right beside the rain gear, for ready use.

Always pack everything in the same spot every time you unpack and pack. Then you'll know where to find any item, even in the dark. You might draw a floor plan of your vehicle, mark off spaces and label them for contents. Then stick to the floor plan at all costs.

If you have a large family and just can't pack everything inside the car or wagon, you'll find one of the car-top carriers a handy item. They hold a surprising amount of light gear. Canvas-top ones are watertight but I prefer real rubber sheeting protection.

In hot climates never park your car even for a few minutes with all windows closed. If you do, you're going to have a blown-out windshield or back window. Heat builds up quickly and expands the air until the car "explodes." Always leave two windows down at least an inch, and you'll have no trouble and return to a cooler car.

Get credit cards from several gasoline companies serving the area over which you'll travel and carry all but about ten dollars in traveler's checks.

Follow these simple first steps to good camping, and your vacation in camp will be one you'll all gladly remember.

Happy camping! •

The Austin 850

[*Continued from page* 86]

These door pockets are big enough to carry several bottles of Magic Elixir, a king-size carton of Tootsie Rolls and a box of exploding cigars. In the rear there are two more pockets built into the body, and under the rear seat there is more storage room. This would be an ideal car for a notion peddler who dealt in everything from watch fobs to falsies.

The 850 is a tremendous buy but as everything, including the Mona Lisa, can be questioned on some points, this car too has its faults—so let's roll them out on the table and look them over.

I found the guts of the front seat held together in a rather novel manner. A series of wide rubber strips tacked to the bottom of the seat is what holds you and the stuffing off the floor. Somehow I question the longevity of this type of construction. But no doubt when the strips get old and saggy you could cut up an old inner tube and replace them.

The heater is fine but the defroster never got off the drafting board. The windshield wipers clean nearly the entire windshield but the action is on the slow side for safe, fast cruising. The horn sounds like a fish peddler with a collapsed lung and is much too mild to demand respect from bus drivers. The front window opens both fore and aft by the sliding-back-and-forth method, which isn't my favorite way of doing it though it is a price factor. The only heat indicator is your nose and the soles of your feet. *The* instrument is a combination large speedometer with an incorporated fuel gauge and two idiot lights for generator and oil pressure. (This is one more indicator than the VW has).

Over hard roads such as asphalt-covered stone, or on concrete with well-defined expansion strips, there is drumming inside the cabin that can prove a bit annoying at certain speeds. A small amount of fiber glass shoved between the headlining and the steel roof might eliminate a lot of this. The pedals are much too small and look a bit like two aspirin tablets on pencils. The left front wheel well cuts a bit into the foot area, which might prove bothersome on a coast-to-coast run. Those are the baddies—now back to the goodies.

The 850's engine is very accessible for work and the rear windows open a few inches for better ventilation, which is something the VW could use. The performance is pretty fantastic, considering the size. Top speed is actually between 74-76 mph. Zero to 30 mph averaged 5.9 seconds; 0-50 mph, 18.1 seconds, and 0-60 mph averaged out to 26.1. The gasoline consumption (and naturally you use regular gas) at times reached the silly point during our tests. Though the tank only holds 6.6 gallons (this is something to gladden your station operator's heart), these 6.6 gallons will take you a long way down the pike, or the better part of 300 miles. We averaged between 41-45 mpg during the entire test of almost 1,000 miles!

In England, for some incredible reason

entirely unknown to me, this identical bucket of bolts is known as the Austin Seven. Now, the Austin Seven was first started as a famous company marque just a few days after they slid Henry The Eighth under a slab. In fact, they've had Austin Sevens around England since the Irish merely hated the English. You can also buy this little crate in the U. S. under still another name, the Morris 850, which differs from the Austin 850 in radiator grille only. The Morris, as you know, was once a product of the famous Morris Garage which gave birth to the MG. The British Motor Corp., a few years ago, gobbled this neat little nest of cars into its own cave and has been building and selling Austins, Healeys, Sprites, Rileys, MGs and such for some time.

To some people the 850 may seem a specialty car, so let's take a look at what it's really good for. To start with, it would make a fine second car for suburban shopping or paying a call on your friendly embalmer. It would be an ideal car for the kids, as they're not too apt to get hurt in it, or as an only car for a city-dwelling couple who want weekend transportation to the beach or country club. But how about the working stiff who wants it for an only car? As a go-to-work wagon (if you live within 50 miles of your job, say) the 1,288-pound 850 makes a lot more sense than tooling a 4,000-pound balloon down the boulevard. Your operating expense will be less than a third. Also, there are thousands of commuters who want a car they can drive to the station and leave there all day but who don't want to use their multi-thousand dollar, thin-skinned beauty for such a task.

But let's get back to that guy who might be considering an 850 for his only car. I did a lot of driving with him in mind. If the Volkswagen, for example, can do anything this car can't do, I wasn't able to find it. True, the Volkswagen is one of the finest-built machines in the world on a dollar-for-dollar basis. Although a several-years-long endurance test hasn't yet been run on this little car with three names, it seems doubtful that it could take the year-after-year beating a VW will stand up under. But this is something I couldn't say for certain on the basis of a 1,000-mile test. One thing to bear in mind is that the 850 sells for $300 less than a Volkswagen and $1,000 less than many of our compact cars —and it has as much interior room as most of them.

For the typical one-car owner who drives just a few thousand miles every year, this car seems a pretty sure bet. A man, wife, one child and a dog could drive it to Florida from Chicago or New York at vacation time without any trouble at all. I personally wouldn't hesitate to make a coast-to-coast run with it. On these long trips you'd be reasonably comfortable, even though not *the* most comfortable driver on the road.

From any angle you slice it, at today's prices the Austin 850 is a helluva buy. If it even slightly fits into your scheme of things, I suggest you contact your dealer and look it over. One thing I will guarantee: You can't find a better car for the money anywhere in the world. •

Franchise

[*Continued from page* 59]

That was a little more than a year ago. Now Pete owns two General Spray trucks and according to company records he should be earning about $25,000 a year!

Perhaps the greatest lure of today's franchise market is the fact that most companies don't give a hoot about your business experience, age or education. Just show them that you're ready, willing and able to work hard and the sky's the limit. And if you're the kind who can come up with good ideas . . .

There is, for example, the brief but amazing history of Werner M. Maahs, who was until recently a young cop in White Fish Bay, Wisc., whose beat took in a Chicken Delight store. Maahs got friendly with the Chicken Delight franchisee and learned that it was a flourishing business, which specializes in selling complete, ready-to-eat packaged dinners to be carried out by customers or delivered to their homes. The business was started by the company in order to sell newly developed automatic cooking equipment.

Maahs learned that he could get a Chicken Delight franchise for about $12,500, more than half of which the company was prepared to help him borrow.

[*Continued on next page*]

With the help of his family and a mortgage on the house, he raised the cash, got his franchise and within a year he had tripled his $5,000-per-annum cop's income.

But the story did not end there. So pleased was the company with his ideas for store layout and equipment design, that they asked him to join the company's headquarters staff in Rock Island, Ill., as a sales engineer. Within 18 months he was made a vice-president and already has more than tripled the income he got out of his first year as a franchisee.

Many of today's franchise operations are rocketing into multi-million-dollar empires because they are based on unique or patent-protected ideas. Launched on the franchise route recently, for example, was the toupee business of Glen H. Taylor, a former United States Senator from Idaho: It all began back in 1944 when Sen. Taylor, while campaigning for election, noticed that his rapidly balding head put him at a disadvantage with women voters.

Unable to obtain a hairpiece that did not look artificial, he made one of his own, painstakingly assembled hair-by-hair on a neatly shaped aluminum pie plate. Over the years, many people remarked how natural his hairpiece looked. He could comb it on his head, wash it and walk through a howling wind with it. In 1956, after he had lost out for re-election to the Senate, he got a patent for his invention, put it on the market as a Taylor Topper. Now he has started a string of franchised businesses, operated by men who are willing to take fittings for Taylor Toppers in homes, small offices or barber shops.

The United Rent-All Co., a nationwide chain of more than 250 franchised businesses, with headquarters in Lincoln, Neb., began as one man's idea, when E. R. Patton, a 37-year-old railroad brakeman, found it next to impossible to rent various tools in town. He borrowed $3,000, bought a stock of tools from Sears, Roebuck and opened the Lincoln Tool Rental Co.

After several years of highly profitable success, he decided to start the United Rent-All chain which trains its franchisees at a replica of the United Rent-All store in Lincoln. In most cases it takes only about $5,000 cash to get a United Rent-All franchise. Many of its franchisees, by renting almost anything a homeowner or businessman can use—lawn mowers, milking machines, sporting gear, garden equipment, coffee makers, hospital beds for house-confined invalids, and ordinary tools—are earning between $10,000 and $75,000 a year.

Franchising is no gimmick. Just as in any other form of business, it takes hard work to succeed. However, thanks to the help provided by big company experts, the rate of failures is remarkably low. A. L. Tunick, president of Chicken Delight, Inc., told me that in his chain the failures were less than five per cent. Other franchise experts reported similar low-failure rates.

Like to cash in on these odds? Like to be your own boss? A franchise may be the answer to your dreams. Your only problem may be in picking the right franchise. To help you make your choice, here are five principal sources of information :

1. National Franchise Reports, 333 North Michigan Avenue, Chicago 1, Ill. A monthly reporting service. Provides details on new franchise offerings, how much investment is required, how much income may be expected and how to apply. A yearly subscription is $12; a 90-day trial subscription sells for $3.

2. 1960 Directory of Franchising Organizations. This is primarily a compilation, by name and address, of some 200 companies who have franchises to offer. It is sold for $2 by Pilot Publications, Inc., 42 West 33 Street, New York 1, N. Y.

3. Financial Security and Independence Through a Small Business Franchise, also sold for $2 by Pilot Publications. It is a concise 45-page, large-sized booklet which was written as a guide for those who want more details on how various franchising systems operate.

4. Modern Franchising, 320 Fifth Avenue, New York 1, N. Y. This is a trade magazine which sells by subscription for $2 a year. It first came out in February 1960, and is designed to cover the entire franchise field. In addition to reporting on new franchise offers, franchise problems, success stories, and tricks of the trade, it also carries advertisements by companies offering franchises.

5. International Franchise Association. Executive secretary, Robert H. Blundred, Screen Process Printing Assoc., 549 W. Randolph St., Chicago 6, Ill.

Keep in mind, however, that the franchise field—as in any other business—has its share of phonies. Never sign a franchise contract without the advice of a lawyer. Also, make sure to check on the company making the offer by contacting your local Better Business Bureau or the National Better Business Bureau at 405 Lexington Avenue, New York 17, N. Y.

It's also a good idea to ask the company to give you the names and addresses of a few of their franchisees so that you may have a look at their operations and ask questions. The phonies will stall you. The reputable companies will be only too happy to supply the information because they know it may convince you to start on the road to fortune with them. •

The Mighty Bulldozer

[*Continued from page* 94]

produced a mass of collapsed and twisted cars. Many had split open and were buried in their cargoes. The torn-up tracks kept a salvage crane from getting close enough to operate. The main line of the railroad appeared to be blocked for days. But crawlers were brought in and in a few hours they had bulldozed away the spillage and rolled the cars clear of the tracks, tumbling them over and over to a point the cranes could reach. Shortly after that train schedules were restored.

During construction of the Oahe Dam near Pierre, S. D., a 50-ton rock truck slipped into 20-foot-deep quicksand. Two crawlers working nearby were quickly driven to the scene. By the time cables were attached from the crawlers to the truck, it had half-disappeared. With their steel tracks biting into the loose gravel of the road, the crawlers lunged at full power against the weight of the mammoth truck, which was made greater by the sucking action of the mud. For over an hour the crawlers maintained this lop-sided tug-of-war until a dragline excavator could be moved in. Together the three machines slowly eased the truck out.

When a construction company tackled the job of widening U. S. Route 14, near Devil's Peak, Wyo., it ran into a thick layer of gypsum rock that threatened to bring the job to a standstill. Time after time powerful charges of dynamite were buried in the rock and set off. Instead of fracturing the rock the dynamite merely blew neat cone-shaped holes in it.

Then the company brought in its biggest crawler, equipped with a rock ripper—a sort of long curved steel finger with a pointed tip. The ripper tooth punched 18 inches into the rock and the crawler lurched forward over the rock surface, leaving a straight line of well-broken stone behind. The job returned to schedule.

In spite of the crawler's prodigious strength, its horsepower rating is not unusually high in a day when the family car may boast 395 horsepower. The largest crawler tractor's rating is little more.

The explanation of this apparent inconsistency is simple. Horsepower is the product of two factors: speed and torque. Torque might be defined as force or push; it's what gives the tractor its power. In an automobile engine, horsepower is developed by building up terrific speed. The crankshaft rotates up to 4400 rpm; the engine will push the car over 100 mph. But in a crawler, speed is played down in favor of high torque. The tractor crankshaft spins at only 1600 rpm; average top speed of a crawler is around six mph, wide open.

Its prodigious push earned the crawler a special place of honor in World War II. Admiral William F. Halsey paid it tribute, saying, "The four machines that won the war in the Pacific were the submarine, radar, the airplane and the tractor-bulldozer."

On the island of Adak, in the Aleutians, the American forces were faced with the job of building an airstrip on bare rock. On nearby Attu, Japanese forces had worked 11 months with hand labor to scratch out an airstrip. The Army Engineers brought crawlers through the surf on Adak and in 96 hours an American fighter plane landed on the strip they had built.

On Iwo Jima, crawlers were kept ahead of our advancing assault troops, clearing the way through terrain for Army tanks.

When the U. S. Army was taking Attu Island, they pushed across some of the worst ground in the world. Enroute across the island, the Army Engineers, with their ever-present crawlers, reached the top of a high ridge, overlooking the Saran-Chicagof valley.

[*Continued on page* 158]

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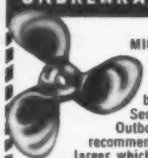

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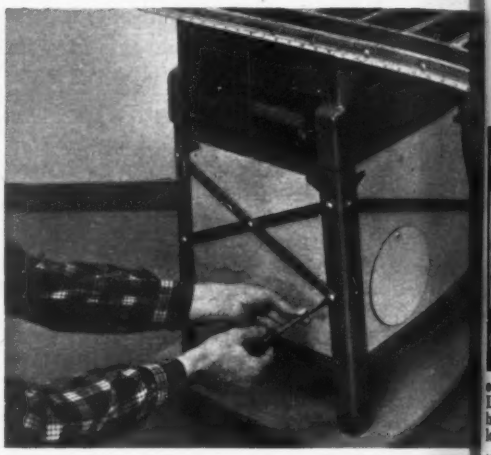
Sawdust Compartment

[*Continued from page* 132]

to the compartment, a circular opening is cut in one side and a slightly larger round door is installed so that it pivots on a bolt. To keep the door flush against the side and so prevent the sawdust from spilling out, a short length of spring is slipped on the shaft of the screw before the washer and nut are put on.

The sides, when cut to fit snugly within the frame, are installed with the bolts that hold the metal crossbraces. •



SIDES are placed inside the framework and secured with bolts which hold crosspieces.

WITHOUT a compartment, sawdust eventually will be tracked to other parts of the house.

Pittsburgh perfects a sensational new Latex house paint!

Easier to apply...even paints over damp surfaces... dries in 30 minutes...resists blistering...lasts longer

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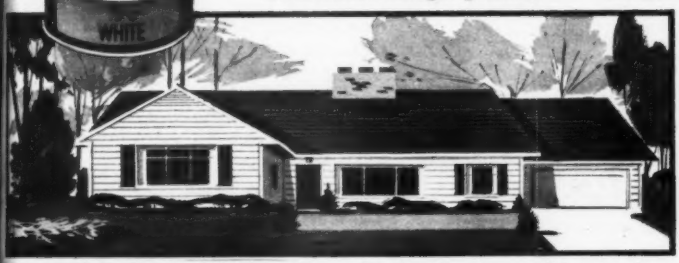
• **Read below** about the remarkable results *you* can expect from new, *perfected* Pittsburgh Latex House Paint!

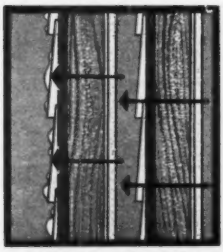


• **Sensational new Pittsburgh Latex House Paint** can keep your house looking "just-painted" years longer. The colors are fade-resistant ...white *stays* white, colors *retain* their crisp, clean beauty . . . and the new miracle resins are so durable they fight the effects of time and weather far longer! The result? A money-saving bonus of extra years between paint jobs!

• **You'll save hours** because Latex goes on so fast and smooth! No brush drag, no lap marks. Use brush, roller or spray.

• **Paint over damp surfaces!** With Latex you can paint over surfaces damp with dew or rain... or paint between showers.

• **Dries in 30 minutes!** Forget about rain, dust and insects messing up your paint job! Latex dries in only 30 minutes.



• **Resists blistering!** Correctly applied, Latex resists blistering. It lets trapped moisture *out*, yet will not let moisture *in!*

• **Clean up with water!** Cleanup and brush care is a snap! Just wash brushes, roller or spray gun in plain soapy water!

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The Mighty Bulldozer

[*Continued from page* 155]

They were assigned to push a road across the valley, to get supplies to the front. The only approach to the valley was down a cliff too steep for any vehicle. The drivers raced the engines, headed the tractors for the brink and jumped for their lives. The machines hurtled headlong down the mountainside, rolling end over end, finally crashing to a stop at the bottom. When the troops reached them the crawlers were still running—and *all six drove away under their own power.*

In 1956 when the Navy launched its Geophysical Year activities at the South Pole, crawler tractors were among the most important equipment. But the machines had to be capable of starting in temperatures down to —65° Fahrenheit. At 65 below zero, oil is like tar, fuel is syrupy, metal often becomes brittle as glass. Also, since a Diesel engine has no spark plugs to ignite its fuel (it relies on the heat generated by compressing air in its cylinders), sub-zero temperatures presented unique troubles. Air temperatures, somehow, had to be raised over 265° before the engines would kick over.

A 30-ton crawler was moved into Caterpillar's special "cold-room" where temperatures were dropped to —65°. Engineers, clad in heated cold-weather suits and working in 20-minute shifts, developed procedures. One method: injecting ether into the cylinders. This highly inflammable gas would spark and burn at much lower temperatures than regular fuel. Another method: an oversized blow torch, capable of heating a 25-room house, mounted under the hood. Still another: "glow-plugs," pencil-like heating elements that stick into the cylinders, heating the air inside to near-combustion temperatures.

When the Navy landed at the Antarctic, the first equipment unloaded were the crawlers. They plodded over the ice and snow and provided the muscle with which the Navy's first camp was carved into Little America. Later, in November 1956, a C-124 Globemaster circled over a shimmering ice plateau eight miles from the South Pole. As it completed a run at 2,000 ft., its belly gaped open, and a seven-ton crawler spun lazily out. Four gigantic

parachutes ballooned over it, and settled it gently to the ground. Within an hour the tractor was at work.

The crawler's clutch is a modern wonder. It will undergo tens of thousands of engagements between a 320-hp Diesel and its 90,000-pound load; it will develop bake-oven operating heat, and will work in dust, highly-abrasive silica, and even under water. How is it done? One company found the answer by reverse logic. Oil on a clutch plate usually spells trouble. But this company's engineers evolved an oil clutch, with plates intentionally bathed in oil. To eliminate slippage the plates are clamped together under 10,000 pounds pressure. The operator's lever is boosted hydraulically to make it a one-finger operation.

When new discoveries are brought out of such research—and have been proven by thorough testing (Caterpillar maintains a 3200-acre testing ground in Arizona for just that purpose)—they immediately go into the machines. The customer doesn't have to wait for next year's model. In a single year a company makes thousands of major and minor improvements in its line. Through these improvements and the development of tougher metals and better lubricants, today's tractor engines often run 10,000 hours without an overhaul. That's equal to 250,000 miles on an automobile engine. Factors like these have caused the cost of moving a yard of earth to drop 20 per cent since 1900.

The men who build the crawlers are backing their machines against all comers. They're even ready to take the space age in stride.

Shortly after the Russians orbited their first satellite, the Sales Department of Caterpillar received a letter from one of its dealers in Ohio, officially requesting the first sales territory in outer space.

The application was approved by return mail! —*Paul Richards*

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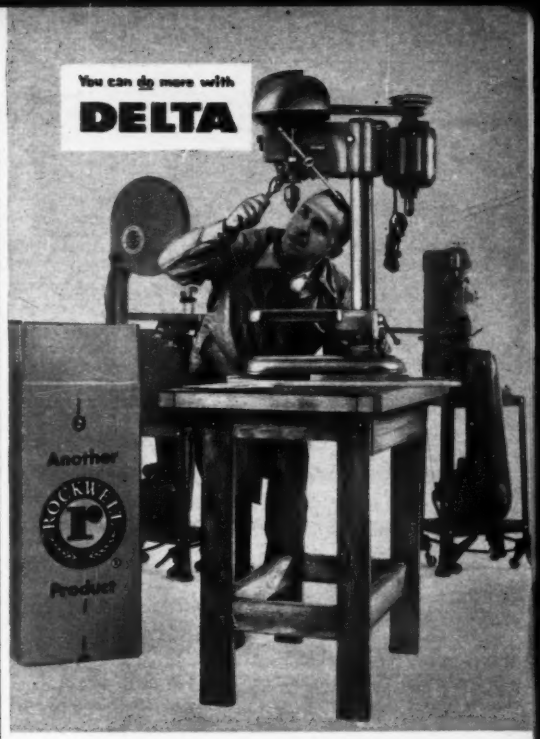
Urban air is usually so polluted that in an air-conditioned building "the use of outdoor air should be reduced to a practical minimum," an executive told the 1960 Building Research Institute Spring Conference. A. V. Hess, president of Hess, Greiner & Polland, Los Angeles, Calif., said that it is generally better to clean and recycle indoor air than to bring in outdoor air.



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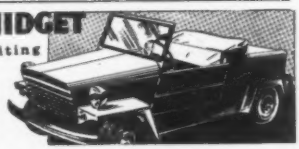

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Camping In Your Car

[*Continued from page* 76]

air mattress on your car's roof. The unit weighs slightly over 100 pounds and retails for $279. Sky-Vue Sleeper, 22800 Buckingham, Dearborn, Mich., sells it.

The Camp-Kit-Camper which weighs less than 96 pounds also rides on the roof in compact form. It rolls on rubber wheels to the campsite and unfolds into a full family-size on-the-ground tent which sleeps six. It has a zipper door, two screened windows, bunks, a table and four chairs. CKC Products Corp., P.O. Box 684, Lodi, Calif., has the $230 unit.

The Pop Tent Corp. of Albert Lea, Minn. also offers a full line of tents including the pop tent, wing tent, parawing tent and Sky-Camp. This last is also toted atop your car.

Stoves and lanterns are an important part of any camper's equipment and there is a variety of makes and models available. The Turner Corp. of Sycamore, Ill. makes a neat little fold-away stove that sets up in seconds and lights instantly. It operates via a propane gas fuel tank and retails for $13.95. Turner also makes a two-burner, two propane tank fuel job that is $24.95.

There's also a wide assortment of lanterns designed to keep your campsite brightly lighted. You can operate a battery-powered light like the new $9.25 weatherproof Radar-Lamp made by Burgess Battery Co. or the $10.95 portable Radar-Lite with a tilting, four and a half-inch diameter lighthead.

Ray-O-Vac of Madison, Wis. makes the Nite Hawk, a prefocused lantern with red signal flasher handle and chromed steel head that swivels 180°. Battery-powered, it's $8.98.

A handy flashlight for your car is Magna-Beam. This compact light has a plastic body and eight-lb. pull magnet on its back to secure it to the dash. It has a clever tilt-out top which lets you aim the beam. Price is $1.59, Piano Molding Co., Piano, Ill.

A vital necessity when camping is to keep your food supply fresh at all times. Hamilton-Skotch Corp. of New York City produces a number of cooler chests and jugs for this purpose. Cooler chests are from $10.50 to $27.50. Gallon jugs are $3.50

to $7.49 and two-gallon jobs $8.95 to $13.95. If you like to do your cooking over a charcoal fire you might try the oval Skotch grill with snap-on legs. It's $17.98. Smaller sizes are also available.

Avid campers often add items that are more in the luxury than necessity class. If you're going to be camping near the water you might enjoy U. S. Rubber Co.'s duffle-bag dinghy. This consists of a two-man inflatable boat with folding paddles and a CO_2 air bottle to blow up the raft. Price is $300 but you can also get a one-man job for $75. In the bag, the whole works fits snugly in your trunk.

If you like to shower in the woods there's a portable one that attaches to the side of your car. Water is placed in an overhead tank. You lower the hose-connected shower head and soap up. The Ward Mfg. Co. private shower is $21.95.

Gloy's Import Co. Inc., of Larchmont, N. Y. has a number of unusual items for campers. One is the 8-in-1 camping tool which adapts to a hatchet, hammer, chisel, nail puller, bottle cap opener, saw, screwdriver and spade. Price is $7.50. Gloy's also carries a German-made portable refrigerator which works on house current or six and 12-volt car batteries. The 24-quart unit is $199.50.

A Marlex plastic four-in-one nested tumbler set can be stored in your glove compartment for a quick drink when the kids get thirsty. They're made by Plasticraft, Leominister, Inc., Leominister, Mass., and available in five-and-dime stores. 39 cents. Economical Bondware plastic-coated hot and cold water cups and plates which will take hot foods are also handy for campers. You can buy the various sets for under $1.

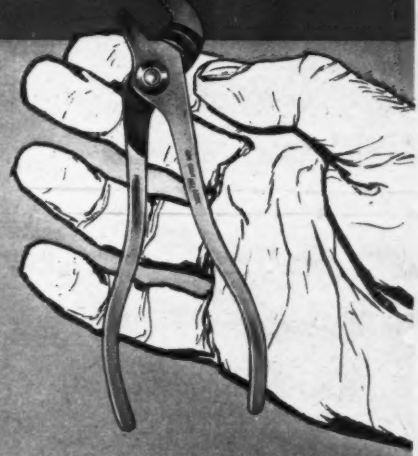
When you're on the road the Mark-Fore three-way adjustable driving seat of nylon with leatherette trim and steel frame will help cut fatigue. It's $14.95 from Hammacher Schlemmer in New York City.

If you're driving through a torrid climate Comfort Conditioning auto seat with an electric fan blower will help you to keep cool. It plugs into the cigarette lighter. $19.95 from Comfort Conditioning, Inc., 34th and Atlantic Ave., Virginia Beach, Va.

Wherever you live, you're probably not

[*Continued on next page*]

For a tight grip in tight places...



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more than a day from some camping area in the nation. A letter and 15 cents to Superintendent of Documents, Government Printing Office, Washington 25, D. C., will get you the Camping Facilities In The National Park Systems booklet. It lists each of the national parks, campsites, cooking facilities, available water and everything else you need to know. State parks and campgrounds information can be obtained by writing the State Park Commission in the capital city of the state you want to visit.

National Geographic Magazine, Washington 25, D. C. will send you a detailed map of National Parks, monuments and shrines in the U. S. and Canada. $1. Camping Maps U.S.A., $2.95, from Adservice, 516 West Cornelia Ave., Chicago 13, Ill. shows campsites in each state and includes information on tents, trailers, fishing, boating, etc.

Ford Treasury of Station Wagon Camping, Vol. II, offers many valuable camping tips and locates 1,300 campgrounds in state and national parks. $2.95.

Travel Counseling Section, Canadian Travel Bureau, Ottawa, Ontario, Canada, will supply you with information about Canada.

The rest is up to you. Plan carefully, then take to the road. We'll wager your camping trip will be the most enjoyable vacation you've ever taken as a family. •

Greatest Cars I Drove

[*Continued from page* 91]

with custom red leather upholstery (which was still perfect when I saw it a few months ago) and its carefully-assembled engine, balanced correctly at the factory, once ran through the traps at Daytona Beach with six people and my dog aboard at 116.4 mph. Some of these jobs during the Mexican Road Race got up as high as 128 mph and cruised for many miles during the run at 120 mph.

Now, you non-race fans may think McCahill is blowing his stack for race cars but this is not true. The Mexican Lincoln was as comfortable as any car on the road, had all the luxury accessories, and no car ever

ade in America could even start to cor-
er with it until Chrysler brought out its
rsion-bar suspension several years later.
he steering was quick and accurate and
hat Lincoln could go through the sharpest
ends with an XK-120 Jag. I cruised thou-
ands and thousands of miles with mine at
igh speeds and its superb roadability and
andling properties saved my neck more
han once. This was the first really safe car
o be built in this country in many years.

Briggs S. Cunningham, most famous for his 1958 defense of the America's Cup in sailing, was also the Number One man behind the post-World War II sports car movement in this country. In the early 1950s he built cars under his own name which came within an eyeblink of ruling the sports car world. Twice third at Le-Mans, and the winner of every major sports car event in this country, the Cunninghams were powered by Chrysler engines. With a top speed of well over 150 mph and a 0-60 mph time (when we tested the car for MI in July 1952) of 5.2 seconds, the Cunningham could stay with anything built in its day—and pass most of them. It was a really great automobile.

The next "great" car on my list was introduced ten years before the Chrysler 300F, at the start of the Fabulous Fifties. This was the 1950 Cadillac series 61 with stick transmission. This job sold in New York City for under $3,000, which was one of the features that made it great. It was the first stock sedan since the Tucker to be able to hit ten seconds flat for 0-60 mph and actually top 100 mph by a mile or two. It was the best-looking car on the road in its day and though the suspension was pretty sloppy in its stock form, by adding good heavy-duty shock absorbers it became quite a road car. What made this car really great was the fact that in absolutely stock condition (except for better shocks), Briggs Cunningham took one to LeMans where it finished tenth overall in that great 24-hour classic, with the late Sam and Miles Collier doing the driving chores. To those of you who aren't race fans, let me explain that finishing tenth at LeMans with a stock American sedan is a feat similar to docking the battleship *Iowa* at Omaha, Neb. This was a great car because it had all the known comfort gizmos of the

[*Continued on next page*]

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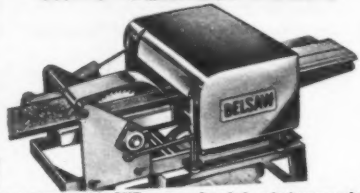

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day plus a terrific head of performance and proven ability. Tie this to the fact that under most normal driving conditions it got between 18-20 mpg and you can quickly see why I selected this '50 Cadillac as one of the greats.

When I tested the Tucker in Chicago many years ago (Aug. '48 MI) it was the greatest car being built in America. Most American new cars then were just pre-World War II models with new skins. As it was strictly a seller's market, manufacturers didn't bother changing too much—they could sell anything. The Tucker, on the other hand, was completely new and loaded with ideas and innovations the industry stole for many years afterward. Powered by a 166-hp pancake aircraft engine converted to liquid cooling, the Tucker had a top speed of 110 mph and a 0-60 mph time of ten seconds flat. This was the first American car that ever came close to ten seconds for 0-60 mph. Among its features were a pop-out windshield and a padded dash. It was the first car with a "step-down" body. The Tucker failed not because the public refused it—the public didn't get the chance to buy it. Legal harassment inspired by a group of industrial ill-wishers, added to Preston Tucker's own lack of big-time financing knowledge, may be the main reasons the car never had a chance. None of its competitors wished it well and there was some fairly convincing evidence that big money was paid to sabotage the company from inside and out. When I drove the Tucker it was the greatest car made in America. If the Tucker had succeeded financially, many other American cars that are good today would have had to improve long before they did.

What about the great cars of the pre-World War II era? The first "great" car I remember riding in as a young kid was the first Rolls-Royce I ever saw, an Alpine I believe, that belonged to Jack Stone who in later years started a pig ranch in France and became known as the Sausage King of Paris. With all due apologies for my youth, my personal experience as a driver of great automobiles didn't amount to too much until the 1920s when I got my hands on a number of "greats."

In speaking of great cars, especially great American cars, no one can omit the name Stutz. Harry Stutz, after some good

uns at Indianapolis with cars bearing his ame, introduced the first Stutz Bearcat in 914. It had a real top speed of just over 80 ph. The Bearcat was a real automobile, utty, solid and with terrific competition ecord. It was the Chrysler 300 of its day.

The Mercer was the closest rival of the tutz for the swashbuckle crown and these ars today, in good shape, command tremendous prices from antique collectors. Both were truly fine pieces of American raftsmanship at its best.

The Rolls-Royce has been the king of all utomobiles for over 50 years. It has been he standard of quality since the very beinning. There have been faster cars made nd, in one or two isolated cases, better ars in some respects. But all in all, the Rolls is the undisputed champion of craftsnanship and quality, the Gibralter and Tiffany of the industry.

I owned a number of Silver Ghosts. My avorite was a two-seater Playboy roadster, its body made by Brewster and attached to a 1923 chassis. I drove this car thousands and thousands of miles over a span of several years and rarely did I ever have any more trouble than an occasional fouled plug (which, incidentally, you could change in about three minutes—try *that* on some of today's monsters). The Silver Ghost Rolls, with its cast-iron block, had both battery and magneto ignition and even the ignition points were made of platinum.

The Rolls-Royce chassis was so durable that many owners had more than one body for their cars. One customer in my own shop had a limousine body for winter and a touring body for summer. It took just a few hours to make the change. The Silver Ghost was one of the best cars of all time and few men have ever driven far enough to really wear one out.

During the 1920s cars were bought for different reasons than they are today. Coachwork was the big item. Performance over the ground had to be comfortable and silent but only in a few cases really fast. One of the greatest cars I owned and drove was the sleeve-valve Minerva made in Brussels, Belgium. This was a magnificent Big Six with a Hibbard & Darrin body that had more lush surrounding it than an oversexed sultan. All the fittings, including the

[*Continued on next page*]

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vanity and mirror and window handles, were made of 14-karat gold (which won't rust, as you know). This was all set into panels of heart walnut and the upholstery was deep Moroccan leather. This job sold to its original owner for $28,000. I paid $1,200 for it just after the depression struck. It was one of the finest cars I ever owned and the one in which I always pictured myself flashing down the Grande Corniche by moonlight, hot on the trail of an E. Phillips Oppenheim quarry.

The Hispano-Suiza was another lush bucket for scorching the highways at speeds close to 90 mph. It was the favorite of Alfonso when he was King of Spain. The Isotta-Fraschini from Italy had enough sex appeal to melt the tail off a bronze elephant. It had a hood as long as the foredeck of the *Queen Mary* and was often topped off by such niceties as a sterling silver hooded cobra radiator ornament (on Rudolph Valentino's I-F, for instance). An Isotta weighed a little less than the Empire State Building but could cruise at 70 mph easily and the inmates were up to their armpits in pure plush. This was motoring on the grand scale. There were many variations on the great cars of the '20s—some had snakeskin bodies and fenders covered with reptile hides imported from India, and hand-hammered, highly-polished aluminum hoods.

The Mercedes-Benzes of the '20s and early '30s were the greatest of all, if hairy-chestedness is a part of your formula for automotive greatness. The SS (Super Sports) and SSK (K for "Kurz"—short-wheelbase in German) were the fastest, loudest juggernauts ever to whip around a corner. Houses would actually shake from the thunderous exhaust as one of these monsters roared by on its way to the Yale Bowl during football season. Some of the fully unaltered brothers of these cars, in the hands of such men as Rudy Caracciola, Rosemeyer and Seaman, were at the same time ruling most of the race circuits in Europe without much competition. The word "great" could be stamped on many Mercedes models over a 50-year period but the ultimate were the cars of the early '30s. I owned two of them and I know. With the top down and wearing a wool ski cap and goggles, a flat-chested bookkeeper driving an SSK could be bigger than King Kong.

These were truly "great" automobiles.

The car that really launched the Chrysler Corporation on the road to fame was a little tan roadster called the Chrysler 70 introduced in 1924. Though the Rickenbacker, built a year or two earlier, had many of the same features, the Chrysler 70 was the first American high-production car to offer small wheels and balloon tires, four-wheel hydraulic brakes, a high-speed, high-compression engine, indirect panel lighting and dozens of other features which the rest of the industry tried to laugh off. I remember well the ads of the day (and especially the competitive salesroom talk) that said, "Those high-speed engines will burn themselves up in 5,000 miles" and "Those four-wheel brakes will lock, causing the car to somersault." That's what they said but every other car builder in America had to eat dirt and follow Chrysler's leadership within a year or two or get out of business. These first tan roadsters (and that was the original color) caught on with the younger set (grandfathers of today) and they sold faster than Chrysler could make them. Oddly enough, you rarely see a picture even in antique auto books of the old 70 roadster—there are lots of photos of five-passenger phaetons and sedans but rarely one of a roadster, the greatest American car of its day and best for the money by many miles.

I have driven many truly "great" cars in their time but the ones already named were the outstanding ones. Other cars I've driven which deserve the full stamp would be the Marmon of the '20s and some of the Packards . . . the Wills-Ste. Clair . . . the big Locomobile of World War I vintage and the Pierce-Arrow 66 of the same time. The Duesenberg J phaeton was a great coast-to-coast touring car. The Bentleys . . . the Alfa-Romeos of 30 years ago . . . the Ferraris . . . the Daimlers and Lanchesters . . . the Maybachs and Crane-Simplexes . . . and many others.

Now, if Bill had said to me on the phone that day we discussed this article, "In five seconds, name the *five* greatest cars you have ever driven," without thinking I believe I'd have blurted out, "My Mercedes, Rolls-Royce, Chrysler 70, Mexican Lincoln and Chrysler 300F." This may not have been completely accurate but I think that's what I would have said. •

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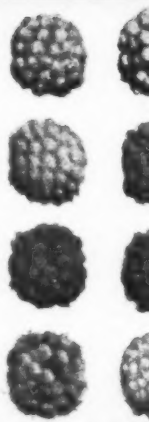

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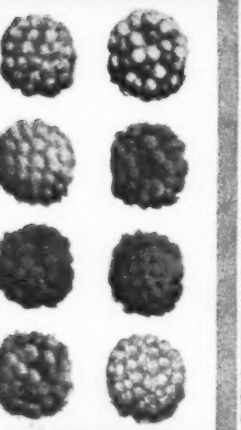

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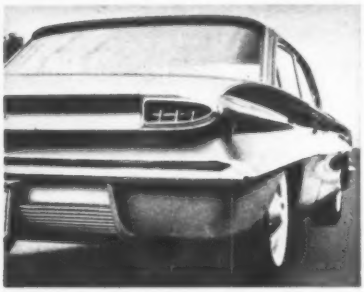

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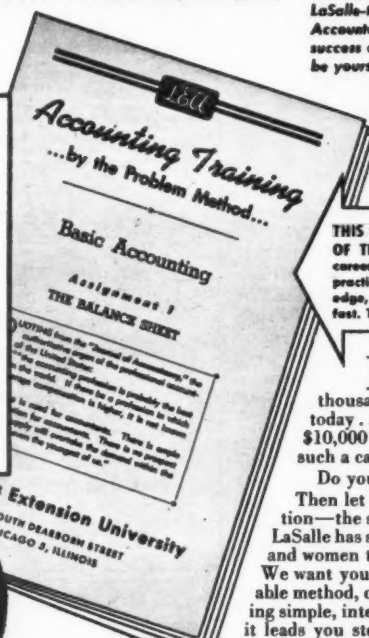

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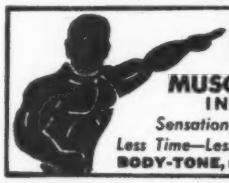

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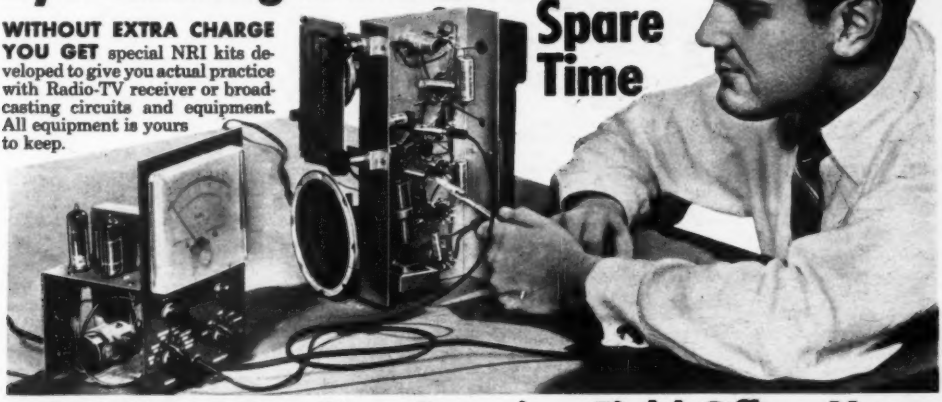

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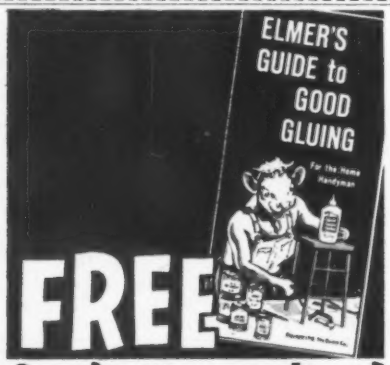

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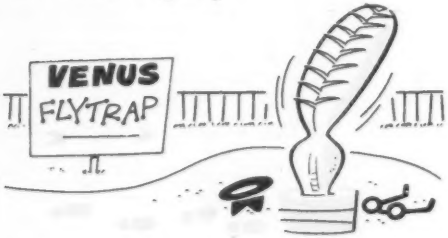
● *Ask Us Anything*

Here are a couple of problems that you might try on your Ouija Board. 1. In the evaporative or "water tower" air conditioner, in which air is pulled through a water-soaked filter, where does the heat go that is removed from the air? 2. Why, in spite of centrifugal force, does a rotating fan blade collect dust?—Richard Green, Knoxville, Tenn.

(1) Our Ouija Board says the heat is absorbed by the water, which evaporates in the outside air. And (2) there isn't enough water and detergent in the air to remove the grease and dust from the fan.

● *Venus Flytrap*



I have been reading your back issues. That article Flora Dines On Fauna, in the March 1955 MI; would you please tell me where I can get a Venus Flytrap?—Bob Reading, Vallejo, Calif.

We sent a man out to the Botanical Garden to check up on this—but that was three days ago. But happily someone tells us that you can send to Armstrong Associates, Box 127-N, Basking Ridge, N. J. $2.75 for three bulbs, $4.95 for six.

● *Painter's Suggestion*

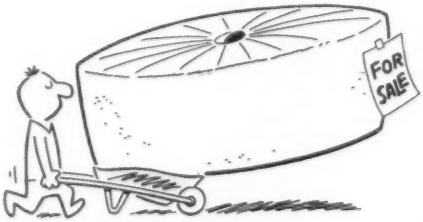
I'm a painter by trade and I keep running into interior walls where the people have put picture hook nails through cellophane tape to keep the plaster from breaking around the nail. Masking tape would do as well for this job and won't leave the residue on the wall that the painter, pro or do-it-yourself, must scrape off before repainting. This adhesive is hard to remove, too.—Bill Atkins, Kansas City, Mo.

● *What Else?*

Looking at the pictures of the Amphicar (This Boat Is A Car, July MI) suggests just one thing to me: what if you're out in that and a big wave comes along?—M. Z., Brooklyn, N. Y.

Invite her aboard.

● *Millstone*



On page 64, July MI, I see where an Ohio man has built a windmill and has installed old millstones worth $800. I have some old millstones; where can I get a price like that?—P. T. W. Squier, Wilmington, Del.

[*Continued on page* 30]

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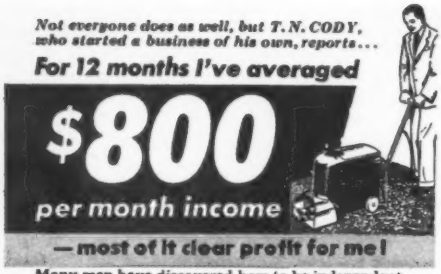

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PATENTS GRANTED

BIRD lovers will like the bird bath that took patent 2,938,495 for Alan V. Hinton of Brooklyn, N. Y. It allows a bird watcher to administer a shower to visiting feathered friends by squeezing a rubber bulb.

A motor scooter that flies won patent 2,938,681 for Antonio E. Palermo of Ottawa, Canada. The scooter has a fixed tailplane, an airscrew to which the motor can be connected, and wings which hold back against the scooter's sides when not in use.

An unusual life preserver devised by Herbert H. Boynton, Jr., San Diego, Calif., was granted patent 2,937,387. The preserver can be worn deflated around the neck. It is inflated by compressed gas and a special neckband prevents strangulation of the swimmer by the swelling preserver.

Germ-proof toothbrushes may soon be on the market. Murray W. Rosenthal of Nutley, N. J., got patent 2,939,164 for his method to give toothbrushes germicidal and active bactericidal properties throughout their normal useful lives. Mr. Rosenthal assigned his invention to Pycope, Inc., of Jersey City.

Lovers of souffles may have a treat in store. Ralph W. Kline of Oak Lawn, and Alan Barde Rogers of Palos Park, Ill., were awarded patent 2,939,792 for a series of two component mixes for the easy preparation of cheese souffles, chocolate souffles, fluffy omelets and other dishes of the same general type.

Ben Goodman of New York has invented a multiple fish catcher (patent 2,939,240) which consists of a number of hooks suspended over, and attached to, a fish-shaped, battery-operated lure. The lure's eyes light up, a soundmaker emits attractive noises and a light projecting above the surface lights up when a fish is caught.

An auto safety belt (patent 2,937,882) devised by David Oppenheim of New York City has its strap ends attached to sliding tracks on the car's doors. When the door is opened the belt slides up and out of the way. The belt also has strips that divide it into two or three seating areas. These strips go through the seat to the frame.

A hypodermic-like device with a chisel-sharp blade for injecting trees with a chemical that kills diseased trees and prevents sprouts from appearing later won patent 2,934,859 for Reuel W. Little of Madill, Calif.

Ralph J. Dell of Lincoln, Neb., has come up with a device that tells the bowler where to stand to strike specific pins. The bowler's stance-indicator was granted patent 2,934,-837. •

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DO TURTLES GO HOME?

DO giant green sea turtles share the homing instinct with pigeons? Are they able to navigate long sea journeys and find their way home again to nest? Dr. Archie Carr, a University of Florida professor, thinks they can. He contends that sea turtles have that built-in radar, or radio direction finder, which Nature supplies to many of its creatures. No one is quite sure but there are responsible people backing him up. The National Science Foundation is helping Dr. Carr in a continuing research project—to the tune of almost $30,000. The prime purpose of the research is aimed at getting information on the basic biology of the green turtle and, as a result, at resupplying the Caribbean with them as a source of food. The green sea turtle is fast disappearing from the waters of the world.

Anyone happening onto the experiment by accident may think he is becoming unglued. Giant green sea turtles will be turned loose in the Gulf of Mexico this summer—but with brightly colored, helium-filled balloons and small radio transmitters fastened to their back! The turtles may even be startled themselves if they realize what's going on.

Tiny radio transmitters, similar to battery-powered pocket radios, will be held to the turtle's thick shells by screws. These transmitters will serve as continuous radio beacons to track the turtle when he's out of sight. While swimming toward his home base, or wherever he may go, the turtle will oblige Dr. Carr by coming to the surface to breathe, and thus poke his radio antenna above the water's surface every minute or so. With a radio direction finder, a boat as far away as ten to 15 miles may thus keep in close touch. Dr. Carr—sometimes called The Turtle Man—hopes the balloons can be spotted at least three or four miles away.

Besides the colorful Gulf of Mexico experiments, further research will take Dr. Carr—with two or three students working on their doctorate degrees—to Africa, Tortuguero, Costa Rica, Aves Island in the Eastern Caribbean and to Ascension Island, a pinpoint of land in the South Atlantic. Ascension Island, long known as the down-range, end-of-the-line for our many missile experiments, may become known as Turtle Alley.

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Invention Clinic

Joseph H. Kraus

In this column each month Mr. Kraus will answer as many letters as space permits on those subjects he feels to be of widest general interest. Time does not allow him to reply to any letters except those printed here. Address your questions to the Invention Clinic, *Mechanix Illustrated*, 67 West 44 St., New York 36, N. Y.

Gardener's Aid

A. D. Cromer of Augusta, Ga., has patented a small hand tool for putting dry fertilizer in holes around plantings. The tool would retail at $5. Should he put more money into selling it?

I doubt that you can manufacture this for $1 which is what you should aim to do if this tool is to be sold for $5. But if you can do this, and if the tool will stand up under hard use, it should sell. I suggest that you make up a number of these and try to sell them through local florists, then try to distribute the items through mail order seedsmen. And you can take my personal order for one of them right now.

Five Times Manufacturing Cost?

Frank W. Leonard of Boise, Idaho, questions the statement that products should be priced at five times manufacturing costs. Does this apply to heavy machines which may cost $2,000 to make? At what cost does the ratio begin to change and by how much?

There is no set ratio. Obviously, if a machine costs $2,000 to make and 50 could be sold at $3,000 the profits would be greater than if only one can be sold at five times manufacturing cost. But the market for highly specialized machines may be saturated by only one or two units. On the other hand, where millions of disposable items are sold annually, a manufacturer might make a very fine showing with a profit of only a tiny fraction of a per cent on each. We have seen the reverse, too. Items which sold poorly at 25 cents gained a considerable market when dressed up a bit and priced at $5.00. Each item requires its own evaluation and decision.

INVENTOR'S TIP OF THE MONTH

The man who develops an efficient thermocouple will find a constantly expanding market for his invention. A practical thermocouple might relegate batteries and generators to the technical museums.

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Perpetual Motion Device

John H. Carruth of Fort Ord, Calif., sends in a modification of a familiar "perpetual motion system." He has been told that this wouldn't work because it defies the law of perpetual motion. Is this true?

There is no law of perpetual motion. What probably was meant was the law of conservation of energy. The place where your reasoning falls down is the notion that by multiplying the speed through pulleys you can increase speed without loss of torque. As the motor, generator, batteries, and belt drives are never 100 per cent efficient, this system cannot be made to work.

Vacuum Train Tube

Dennis Derksen of Saskatoon, Sask., Canada, suggests a transportation system in which small trains are driven through a pipe by vacuum. What is my opinion of this idea?

It wasn't good some 30 years ago when I first saw it, and it hasn't improved with age. These things cannot attain the supersonic

[*Continued on page* 20]

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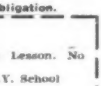

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Invention Clinic

[*Continued from page* 18]

speeds which you imagine. Proof of this is at hand in the pneumatic tube systems used in stores. For large-scale operation this system is economically unsound.

Vertical-Take-Off Airplane

Frank A. Petry of West Los Angeles, Calif., says that he has designed a completely reversible, vertical-take-off craft. Is further developmental work advisable in view of existing patent policy?

I am not aware of any existing patent policy which should cause you to hesitate either in your developmental work or in your applications for patents. A thorough search of all patents relating to this field is advisable. It is not easy to promote a new airplane design but you may have something worthy here.

Why A Patent Attorney?

Frank Mohaupt of Chula Vista, Calif., wants to know why a patent attorney is necessary when applying for a patent. And why do we recommend a search when the Patent Office does its own searching?

You can get your own patent without the aid of an attorney by following the instructions which the Patent Office will send you on request. But even that Office recommends that you hire a registered patent attorney. The reason is that the value of your patent may depend on how thoroughly your claims have protected your rights. A search may tell you if there is a reasonable assumption that your patent might be granted. Often it will disclose what others have patented in the same or even remote fields but with potentially conflicting claims. This may cause you to look more closely into your own invention and perhaps to improve your design. The searching done by the Patent Office is done after you file for a patent, not before. For these and many other reasons I recommend that inventors should hire the services of experts.

Tape Holder

W. A. Jones of Nashville, Tenn., has designed a tape holder which is reported to be patentable. Should he go ahead with the patent, should he have models made and distributed or should he try to sell to a manufacturer at a flat price? How can he protect

[*Continued on page* 23]

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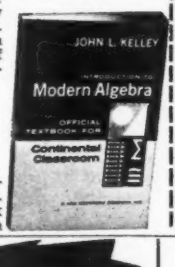

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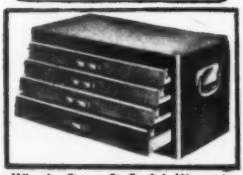

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Invention Clinic

[*Continued from page 20*]

the machine without a patent until a decision can be reached?

As no diagrams are enclosed, I cannot comment on the design. Tape holders are on the market. The fact that you intend to use yours for a specific purpose will not prevent others from supplying their holders for the same use. Even though your design may be reported patentable, this does not make it potentially profitable. Few if any manufacturers would be willing to purchase an invention to which you do not even have an established right. And there is no way to get this except through a patent. If you are sufficiently convinced that you can sell your product or invention you should be willing to risk the investment for a patent. Then you should follow any or all of the procedures you outlined. •

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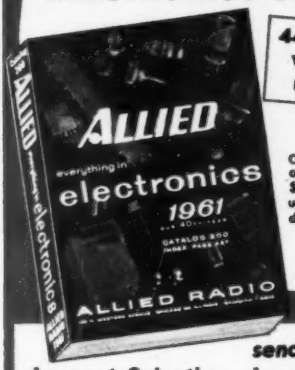

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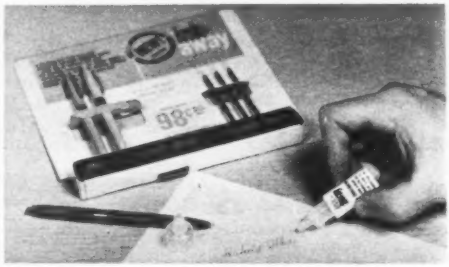
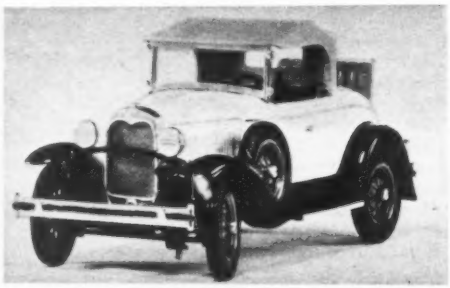


FIRST ink eradicator for ball-point pens has been developed by Ink-Away Products Co., Woodbridge, N. J. Three colored ballpens and refills plus eradicator retail for 98 cents.



MODEL A Ford roadster is made from Metal Kit series of Hubley Manufacturing Co. Body, frame and running gear are metal; seats and accessories are plastic. Interlocking parts need no glue. Four cars in series: $2.98 ea.

SAFE-HETE is a small, convenient electric water heater that sells for $7.95. The 1150-watt element is inside a five-inch diameter shell, takes ten minutes to heat a gallon. Electra, Inc., 809 W. Waveland, Chicago 13.

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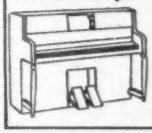

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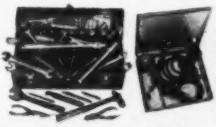

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Dear Editor

[*Continued from page 12*]

That's easy—find a guy who's building a windmill. Is your millstone in good condition or a worn-out discard? If the former, you might write to regional museums, historical societies, etc., so that people interested in technological antiquities will know about it. Otherwise, use it for a doorstep—or a coffee table the kids can't knock over.

• *How To Play Go*

In a past issue of MI (May '59) I recall an article on making a Go board. The article tells how to play Go Ishi but not the more complicated game of Go. Where can I get the rules for Go? Can it be played without a good player to teach it?—K. T. Schmidt, Ft. Lauderdale, Fla.

The American Go Society puts out The Rules Of Go in booklet form for 75 cents. J. W. Matsomuto, 1048 Second Ave., New York 22, N. Y., sells it. A five-year-old can be taught the simple rules of Go and have great fun; on the other hand, a master of the game finds a lifetime too short for the study of Go. Go allows handicapping without altering the nature of the game—this is not true of chess—so any two players, even an expert and a novice, can play each other and enjoy it.

• *Help!*

I am looking for an experienced collector's help in the field of reptiles (herpetology). Do you have a reader who will help?—Randy Holt, 7526 Avalon Dr., Ft. Wayne, Ind.

Do you want help in that field or in getting out of it?

• *Steering Wheel Dial*

Was just reading your May Inventions Wanted and noticed that Michael Tirpak of Detroit, Mich., was interested in a car radio dial placed in the middle of the steering wheel. For his information a variable capacitance silicon diode developed by Hughes Aircraft makes it possible to tune a car radio by a remote control located in the center of the steering wheel.—John L. Buttino, Binghamton, N. Y.

• *Lifesaving*

Is this mouth-to-mouth respiration a preferred method or only to be used in case you

[*Continued on page 34*]

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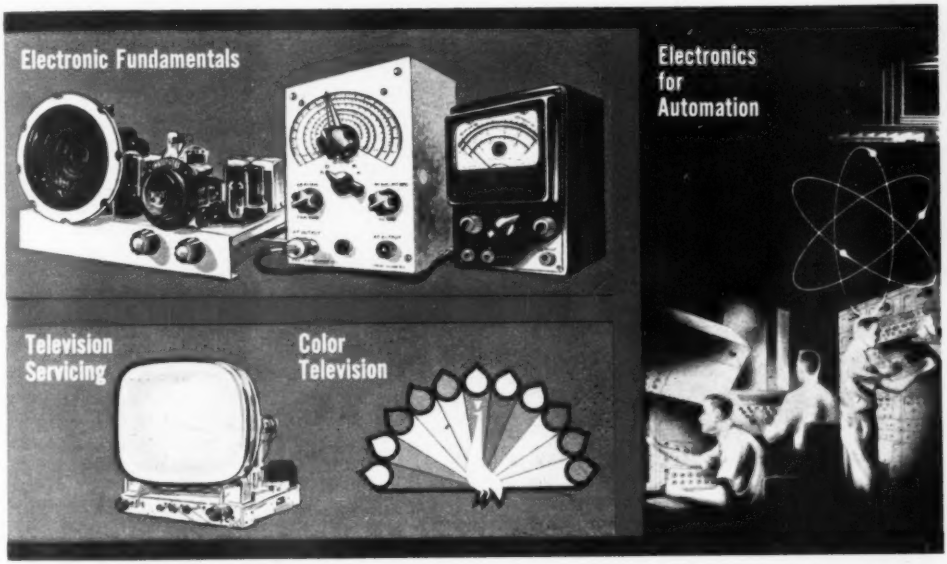

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IT'S COMING

Here are some of the miracles of science you'll be seeing soon.

A COMPUTER-directed system being developed by IBM will project a highly accurate circular map of an area 400 miles in diameter on a seven and a half-inch TV screen. It will enable future supersonic pilots to pinpoint their positions by merely glancing at the screen.

New York City will have a combination marina, seaplane base, parking garage and waterfront service station sometime in the spring of 1961. The multi-purpose facility will be built over the East River by the Department of Marine and Aviation and leased to the Gulf Oil Corporation.

"Ghost" crews may operate U.S. maritime ships of the future. The ghost in this case would be automation. The U.S. Maritime Administration is currently conducting research along these lines for the purpose of reducing costs.

Color-photos-in-a-minute may soon be here. Dr. Edwin H. Land, President of Polaroid Corp., recently gave a demonstration of the company's color process by taking a picture and showing the color print that was processed in the camera.

Spacemen may be helped by hypnosis, according to Professor Roy M. Dorcus of the Psychology Department of the University of California. Professor Dorcus said hypnosis might be able to reduce fears and anxiety and combat boredom and that spacemen would be able to hypnotize themselves to sleep, then awake "in an alert condition."

Cattlemen may soon be able to tell when to breed or sell their stock by a machine which is being developed by the Rand Corp. It will enable ranchers to obtain the most money from a given herd of cattle.

Naturally-colored pink grapefruit juice which is being developed by U.S. Department of Agriculture scientists may soon be on your breakfast table. The new juice will not have the usual muddy appearance of colored grapefruit and will pack more vitamins.

The possibility of farming and mining the oceans for new sources of food, fuel and minerals is being explored by the American Geographical Society. The AGS is beginning a new atlas of the North Atlantic Ocean which it will cover from surface to bottom and from the Equator to the Pole.

Shock waves from a burst of high voltage electricity may stamp metals of the future into shape, according to Westinghouse Electric Corporation engineers.

A special type of refrigerator is being developed for space travel by General Electric for the Air Force. GE scientists are seeking new ways to keep food reserves fresh for long periods of time.

Mass immunization against disease by jet injections may provide a breakthrough in the elimination of epidemics that have plagued underdeveloped nations for centuries. Results obtained with jet vaccine in Pakistan give promise of "a new horizon in the field of mass inoculation," according to field sanitation advisor, Richard L. Towle.

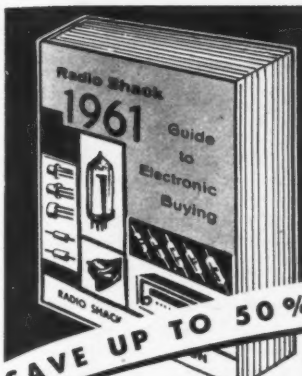
Ford's Levacar—the vehicle that rides on a cushion of air—is getting off the ground. Ford is building a proving ground for the vehicle which will include a ten-mile diameter oval track to test the car at claimed speds of from 200 to 500 mph.

A new synthetic rubber, completely non-inflammable, highly resistant to attack by gasoline and corrosives, and still soft and resilient at 60° below zero, is being developed by Minnesota Mining and Manufacturing Co. and the U.S. Army Quartermaster Corps.

A mixture of peanut butter and kepone, a new slow-acting stomach poison, promises to rid the South of the voracious fire ant. Scientists of Alabama Polytechnic Institute say experiments thus far have been 100 per cent successful against the insect scourge. Fire ants are land-destructive, have a painful bite. They got into the U. S. through Gulf seaports.

Project X is the name of a design for a rocket engine which would be suitable for launching an astronomical space observatory carrying a small crew and weighing over 13 tons. A Bristol Siddeley Engines Ltd. research team designed the power plant which is claimed to be extremely practical.

—J. Robert Connor



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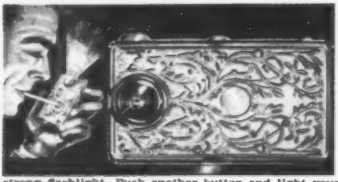

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Dear Editor

[*Continued from page* 12]

don't know the more difficult ways?—Mickey Phelan, Philadelphia, Pa.

Mouth-to-mouth is the best method and the easiest. We repeat instructions here because they can't possibly get too much publicity: 1. Stretch victim flat, face up. Turn head to clear mouth of any obstruction. Pull tongue forward to prevent its blocking the air passage. 2. Open the victim's mouth and tilt his head back by forcing your left thumb between his teeth and using the other fingers of the same hand to hold his jaw up. At the same time pinch his nostrils shut with right hand. 3. Draw a deep breath, place mouth tightly over victim's mouth and blow hard enough to make his chest rise. Allow him to exhale. 4. Repeat every three or four seconds. •

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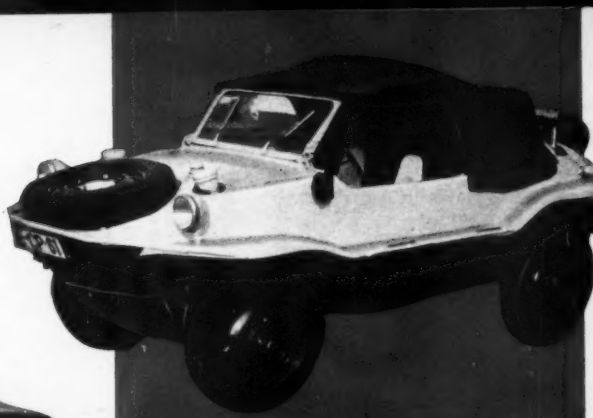

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Fred Slade
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● *I was watching the Jack Paar Show last night on TV and he used the word "hell" twice. I got to thinking about this, that you often use the word "hell" in MI. When I thought more about it I remembered reading that you have a lot of ministers who read your stuff. This seems strange, considering your language.*

George Fulton
Buffalo, N. Y.

George, let's face it—who the hell says "hell" more than ministers?

● *I am thinking of a Comet.*

B.W.
Blytheville, Ark.

So is Wernher Von Braun.

● *This hasn't anything to do with automobiles, Uncle Tom, but as an old reader, could you possibly explain to me why income tax forms and instructions have to be so complicated? I have a high school education but it's not enough to cope with these forms. A friend of mine who has a diploma from Dartmouth says he can't figure them out either. Can't something be done to simplify giving our money away?*

C. L. Bates
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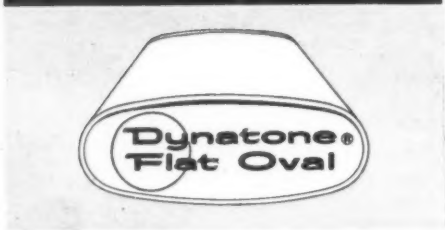
T. J. Doubleday, Jr.
Detroit, Mich.

There was a lot of unofficial activity and backing by most automobile manufacturers but one outfit (perhaps the one you have in mind) *did* call all of its men back to Detroit, with one exception. The exception was a

[*Continued on next page*]



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● *I'd like to know how to get into a job like yours. I like cars and the way they work. Could you tell me just how you got yours? I live at P.O. Box 481, Sunnyvale, Calif.*

John Lukes
Sunnyvale, Calif.

To get into a job like mine you should arrange with your parents to drop you on your head several times while very young. Don't you find that box a little crowded, especially when you have guests?

● *I have been an avid follower of your reports for ages via MI. I have watched the 0-60 mph times drop from 12 to 8 seconds and horsepower climb from 200 to 300 and up. I have been building up a collection of photographs, taken by myself, of American cars, all makes, 1955-1960s, and have just passed the 320 mark! Do you know of any way I could get in touch with an auto-cum-shutterbug over there with the idea of swapping car photographs with him?*

J/T Church 682204
Technical Wing (R.I.F.)
Royal Air Force, Watton
Thetford, Norfolk, England

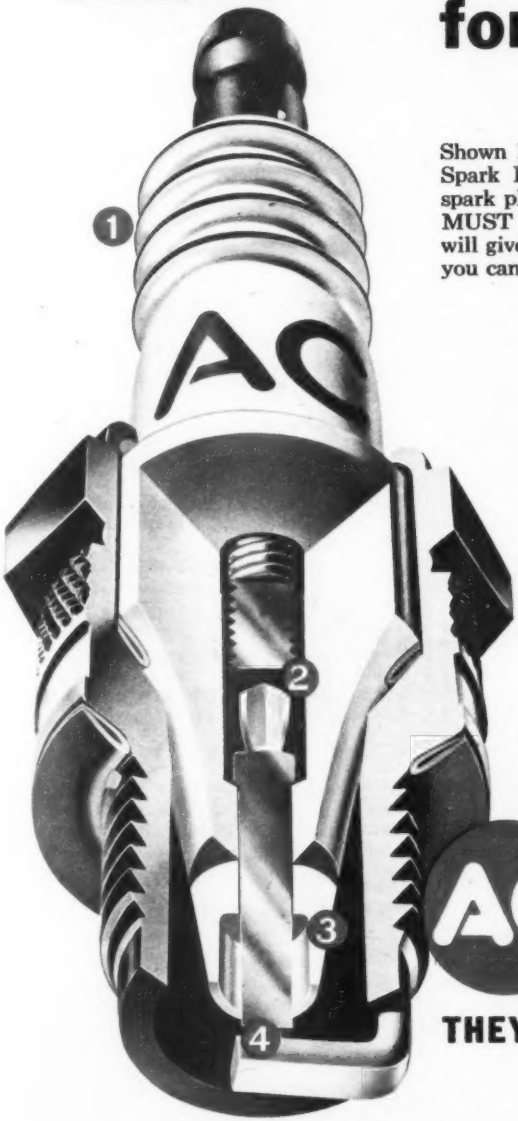
Okay "auto-cum-shutterbugs"—here's a chance to exchange a few prints across the pond. Write directly.

Smell-A-Rat Department

In the last two months I've received a great many letters from various parts of the country complaining about a well-known make of automobile—one of our best. The letters claim just about everything happens to this make of car (which the writers say they have bought) aside from experiencing an Indian uprising in the trunk. Some of these letters (from districts where I have contacts) were checked and I found one of two things—no such writers existed or, in cases where they did, they never owned the car they were complaining so heavily about. In two cases they happened to work for competitive dealerships! I realized several of the letters might be true but the majority were phonies. This is an old trick, used over 30 years ago by one well-known manufacturer to discredit the products of a competitor with the press. I trust

[*Continued on page* 52]

Here's why AC Spark Plugs ARE THE BEST for your car!



Shown here are four exclusive AC Fire-Ring Spark Plug features not found in any other spark plugs . . . four points of proof why ACs MUST be the best . . . four reasons why ACs will give you the finest spark plug performance you can buy for your car.

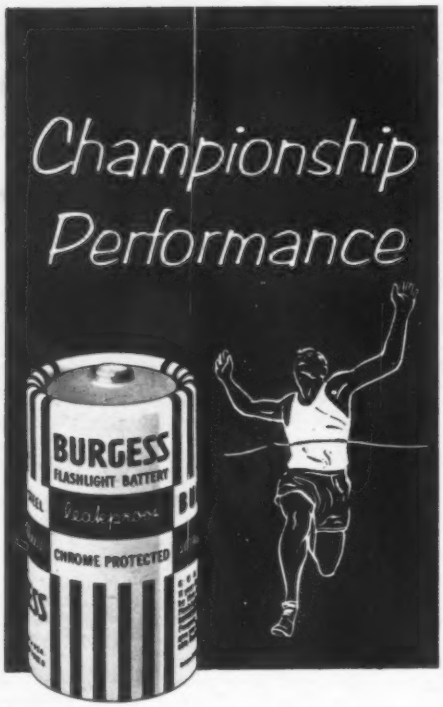
1. **Buttress Top design** lengthens the flash-over path to provide quicker starting and surer firing.
2. **Copper-Glass sealing** of inner structure prevents alteration of spark plug heat range and consequent spark plug and engine damage—assures smoother engine performance.
3. **Hot Tip Insulator,** long and thin, with deeply recessed tip, heats faster, cools faster to stay clean longer.
4. **Isovolt Alloy electrodes,** massive and thick, decrease electrode gap wear and resultant misfiring, for longer peak performance.

If your car has gone 10,000 miles or more since you last changed spark plugs, ask your dealer to install a set of new . . .

AC FIRE-RING SPARK PLUGS

THEY MUST BE THE BEST!

AC SPARK PLUG ❀ THE ELECTRONICS DIVISION OF GENERAL MOTORS



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battery design

BURGESS BATTERY COMPANY
DIVISION OF SERVEL, INC.
FREEPORT, ILLINOIS • NIAGARA FALLS, CANADA

Mail For McCahill

[*Continued from page* 50]

other publications aren't being taken in by such a shoddy campaign.

● *A friend of mine, a sports car nut, says he is getting a new Hypoxy 6/4 which he claims seats six, or occasionally four. I don't understand. Besides, I say they don't make the Hypoxy anymore. Who is right?*

John Jerome
Odessa, Texas

Our grapevine informs us that *you* personally are the manufacturer of the Hypoxy 6/4, and this is merely a deucedly clever way of gaining some free publicity. As you can see, it worked. Lotsa luck.

● *I am 16 years old and expect to get my first automobile next year. Would you please tell me how you got your first car?*

Teddy Evans
New Orleans, La.

That brings back fond memories, Teddy. I'm not sure if I ever wrote how I got my first car but here's how it happened. As a kid, I was a junior member of the Larchmont Yacht Club where I spent most of my time sailing. An old pal of my father's, Colonel Fred W. Weller of Standard Oil, owned a number of expensive cars and kept some of them in the yacht club garage. One day while talking to him, he asked me what I'd like most in the world and I quickly answered, "An automobile." Without batting an eye he said, "I've got four in the garage out there, take your pick." And he wasn't kidding! I ended up with a $9,000 Winton less than a year old. The moral of this is: all you have to do is find a Col. Weller. All the other cars I've owned since then came a lot harder.

● *I read your column every chance I get. Some friends and I have started a car club; the name is "Vampires." Do you have any helpful hints for us?*

Danny Maples
Knoxville, Tenn.

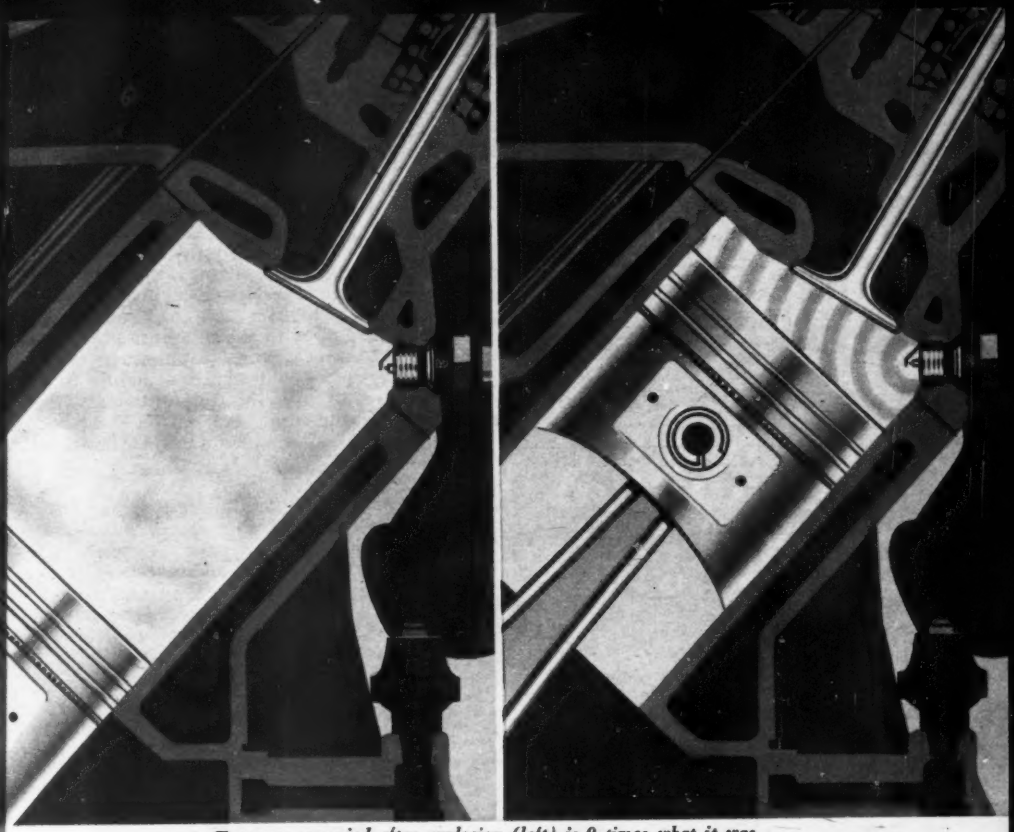
Yes. Get a couple of barrels of fresh blood.

● *Let's have the truth, Uncle Tom. I've seen you on TV and I know you've done work for gasoline companies—is there really any difference between one gasoline and another?*

Pete Vitello
Pittsburgh, Pa.

There is a definite difference. It comes in the blending and in some cases, the additives. In other cases, the difference comes in how

[*Continued on page* 54]



The space *occupied after explosion (left) is 9 times what it was before explosion (right). Therefore, the compression ratio is 9 to 1.*

What compression ratio really means

Compression ratio is the ratio between the amount of space which gases occupy after explosion (left), and before explosion (right).

Here's what happens during the four-stroke compression *cycle* used in most passenger car engines. First, the piston in the cylinder goes down as the intake valve opens. This lets the vaporized gasoline-and-air mixture enter the cylinder. Second, the piston rises to its end position, squeezing the mixture together (compression).

Third, the spark plug ignites the mixture, causing an explosion that forces the piston down on its power stroke, which turns the crankshaft. And fourth, the piston again rises as the exhaust valve opens, pushing the burned gases out of the cylinder (exhaust).

To keep all the power built into your engine, use this combination of Texaco products: Sky Chief Su-preme gasoline in the tank, and new Havoline Special 10W-30 motor oil in the crankcase. Here's why:

Sky Chief Su-preme has a special petroleum base additive called *Petrox* that gives you unusual upper-cylinder protection other gasolines don't offer. And new Havoline Special 10W-30 protects moving parts in summer heat and freezing cold as no ordinary motor oil can do. You use the same grade in all seasons . . . but it should be changed *regularly*.

That combination offers just two reasons why you'll drive with more pleasure and save for good measure with Texaco.

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Mail For McCahill

[*Continued from page* 52]

the octane rating was obtained. Some gasolines that are fine in one make of car fall flat with another, even though the cars are both the same model year. Using a premium gas in a low compression engine is not only a waste but cuts into performance. In some cars with extremely high compression ratios the engines will ping with the premium grade of one brand but not with that of another. Each combustion chamber design has slightly different characteristics and different fuels will work differently in all of them. The sensible thing to do is experiment until you find the gasoline *your* car runs best on.

● *Dad got a '54 Buick Special last summer and we've never figured out what one light on it means. This light shines on the clutch and blinks on and off sometimes with the lights on. Could you explain this?*

Michael Leach
Scott City, Kansas

Certainly. It's a "Blinking Clutch Light."

● *Your article in the January 1960 MI, in which you indicated that possibly we might see some karts go up Pike's Peak, has created considerable interest around these parts. I might explain that we are a newly organized kart club and are in the process of chartering with the Go Kart Club of America. Since we are located where the hill climb is held, I would like to offer our assistance and facilities in any way to help establish such an event for karting.*

Major Fred Strout
Pikes Peak Karting Assoc., Inc.
28 East Jackson St.
Colorado Springs, Colo.

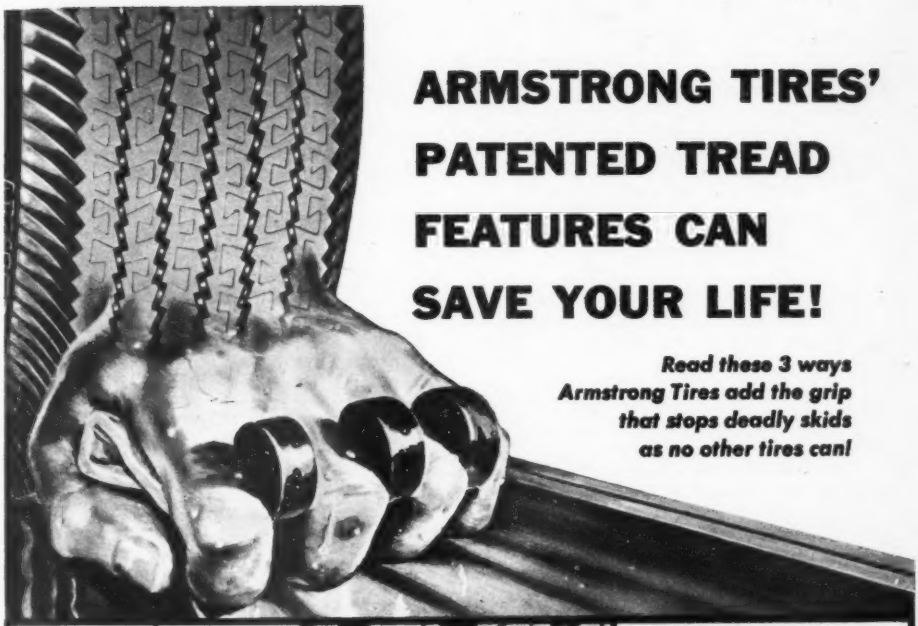
Okay, kart fans, here's your chance to go 'way up. Write him.

● *I heard you once wrote that carrying 32 pounds of air will double the life of tires, over carrying average factory-recommended pressures. Is this correct?*

Arthur T. Healey
Newark, N. J.

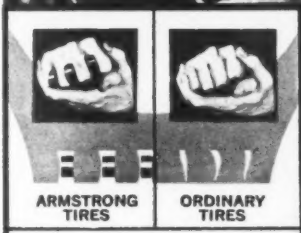
Just yesterday I had a long session with one of the top tire engineers and he came out with the following statement: "The difference between carrying 36 pounds of air and 22, as recommended on some cars, will actually triple the life of the average tire." The reason most manufacturers recommend low tire pressures is that by recommending 22-24 pounds they make this low pressure work as part of the suspension system for absorbing

[*Continued on page* 56]



ARMSTRONG TIRES' PATENTED TREAD FEATURES CAN SAVE YOUR LIFE!

Read these 3 ways Armstrong Tires add the grip that stops deadly skids as no other tires can!

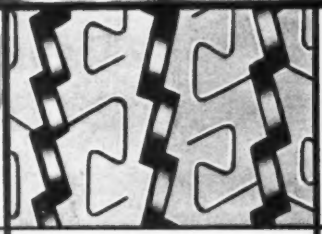


Famous "Ounce of Prevention"

PATENTED SAFETY DISCS KEEP TIRE'S GRIPPING EDGES OPEN

Just as Safety Discs in fist (above left) keep fingers apart, so over 1000 Safety Discs in each Armstrong Tire keep tread's gripping edges apart, always ready to grip – no matter how hard you brake!

But fingers of fist *without* discs (above right) *can* squeeze shut. That's why ordinary tires, lacking Safety Discs, can squeeze smooth and slippery under braking pressure – *and you skid.*

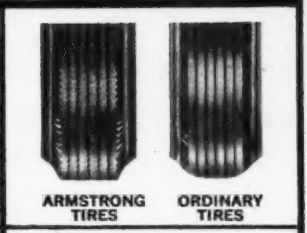


Grip in all directions!

PATENTED INTERLOCKING SIPES ADD OVER 2600 GRIPPING EDGES!

Sipes are slots put in tires to add gripping edges. Only Armstrong tires have S-shaped, *interlocking* sipes. They add over 2600 gripping edges, provide "bite" in ALL directions, sharply improve protection against forward *and* side skids.

In winter, interlocking sipes' "wiper" action keeps you safer on wet roads, gives you snow tire "go" on packed ice and snow.



Grip where it counts!

UNI-CUSHION CONTOUR LAYS MORE LIVE RUBBER ON ROAD

Armstrong Tires, when inflated and rolling, put more tread – more gripping edges – on pavement. Greater stability at high speeds! Faster, surer stops when you brake!

Another extra: Armstrong's anti-vibration tread literally cancels noise! No hum, no whine, no drone: you ride on a whisper. Talk to your local Armstrong dealer – he's listed in the Yellow Pages.

Get this extra safety at no extra cost!

ARMSTRONG TIRES

grip the road to stop deadly skids as no other tires can!

Armstrong Rubber Company, Home Office, West Haven, Conn.

[Continued from page 54]

shocks and mushing out dips. This is not only bad advice by the manufacturer but, in my opinion, a dangerous practice as extreme low pressure cuts considerably into the roadability and control factors of any automobile. Those 14-in. wheels, now fairly common, cut deeply into tire life. I always carry 32 pounds cold for normal driving and go as high as 60 pounds for really high-speed work.

● *If a car is in good condition and sounding good, but can be heard two blocks away, is the muffler bad or could it be something other than the muffler?*

Gene Peters
Huntingburg, Ind.

You may have just run over a cat's tail.

● *I understand from a friend of mine that a lot of old readers of yours have remembered you in their wills. I was told that you have received several old-time cars this way, and a big collection of guns. Is this true?*

Frank L. Graham
Seattle, Wash.

Not a word of truth in it, Frank—but I'm all for the idea. What have you got?

● *Uncle Tom, while I realize most of us service station men aren't too bright, I have a beef. I wonder if those so-called geniuses in Detroit ever tried to get to the gas caps on some of these new models while wearing gloves? True, we are a little nuts for living in a country where it gets below zero but we've got to eat. Getting back to the gas caps. After you remove the gloves, you still lose a lot of skin getting the cap off. I had to bug someone on this matter and you are the only one I know who has the intestinal fortitude to tell these jokers off.*

Vern Williams
Osage, Iowa

Gas caps on some cars are pretty silly, Vern—especially the location—but you'd have to know the metabolism of a typical Detroit designer to understand why. The average one feels he hasn't done anything until he's made whatever he's designing really complicated. After all, in some cars, the gas cap is the best-looking part—why hide it?

● *What is the cheapest thing you can do to a six-cylinder Chevrolet to make it take off faster?*

Jimmie Rue
McDonald, Tenn.

[Continued on page 58]

here it is . . . TETRA-BEAM™

a four beam system for ALL two headlamp autos

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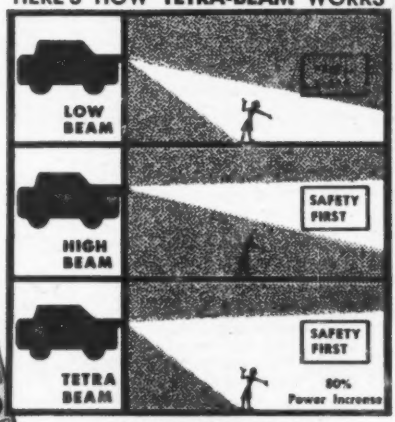
HERE'S HOW TETRA-BEAM WORKS



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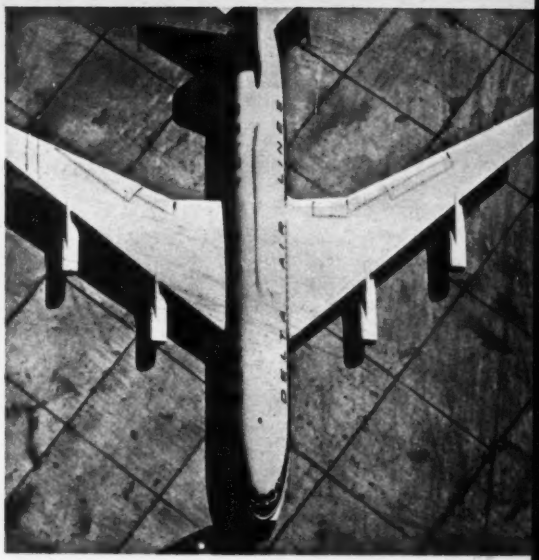
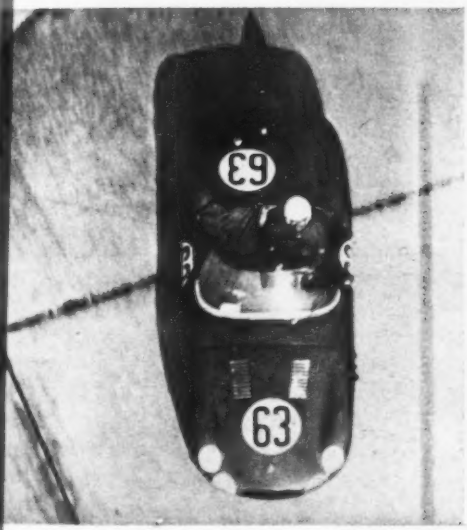
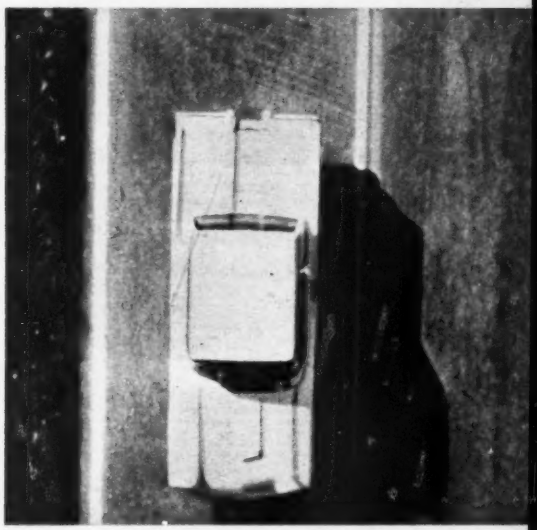


All U. S. jet engine manufacturers use Champions



6 out of 10 winners at Sebring used Champions



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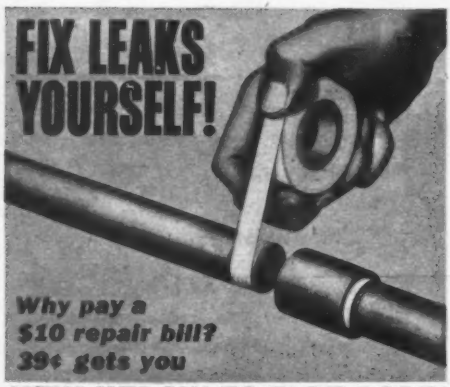
Q. Why do the experts, in field after field, where performance is vital, choose Champion spark plugs?

A. Because they know they can depend on Champions to deliver every bit of performance from every drop of gas. Your car will perform better, too (and save money on gasoline) with new Champions. Put in a set every 10,000 miles!

Worn spark plugs waste lots of gas—so check your plugs every 5,000 miles!

CHAMPION



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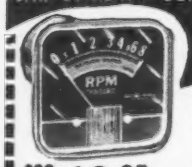

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Mail For McCahill

[*Continued from page* 56]

First you fill the trunk with nitroglycerin, then slam the lid shut.

● *I've been a reader for quite a while now and find that on the whole you're a pretty fair columnist for a country boy. However, your column has recently become rather expensive for me and I may have to quit reading it. For instance, you gave the '59 Plymouth a pretty good write-up, so I had to go out and buy one. Then a few weeks ago the Missus saw your picture and said you were cute, and natcherly that'll cost me a new set of bifocals for her. Now, after you read this letter you'll probably tell me to go to hell and I'll have to hire someone to take care of my business while I'm gone. I've got a question for you. Why did the manufacturers do away with the old oil-bath air cleaner and is there any way I can avoid the three or four-buck bite for a new disposable cartridge every so often?*

Bill G. Fowler
Oklahoma City, Okla.

Please don't buy your wife bifocals. If she thinks I'm cute, let her be—I need one fan along that line. About the paper filters: many race men who use cars under extreme conditions feel they do a much better job in keeping out abrasives than the old oil bath rigs.

—*Tom McCahill*

HALTS BATTERY CORROSION

BATTERY HOLD-DOWN bolts which are oiled occasionally won't corrode and your battery will be easier to take out when necessary.

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You do the choosing! The Army's new "Choose-it-Yourself" System lets you pick valuable training before you enlist. Here's how it works:

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Get satisfying flavor...so friendly to your taste!

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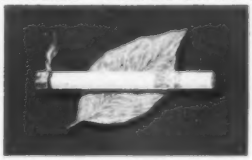
NO DRY "SMOKED-OUT" TASTE!

You can light either end!

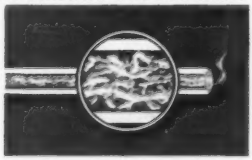
See how Pall Mall's famous length of fine, rich-tasting tobacco travels and gentles the smoke—makes it mild—but does not filter out that satisfying flavor!

HERE'S WHY SMOKE "TRAVELED" THROUGH FINE TOBACCO TASTES BEST

1 You get Pall Mall's famous length of the finest tobaccos money can buy.



2 Pall Mall's famous length travels and gentles the smoke naturally . . .



3 Travels it over, under, around and through Pall Mall's fine tobaccos . . . and makes it mild!

OUTSTANDING...and they are MILD!

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